



VIDEOCASSETTE PLAYER

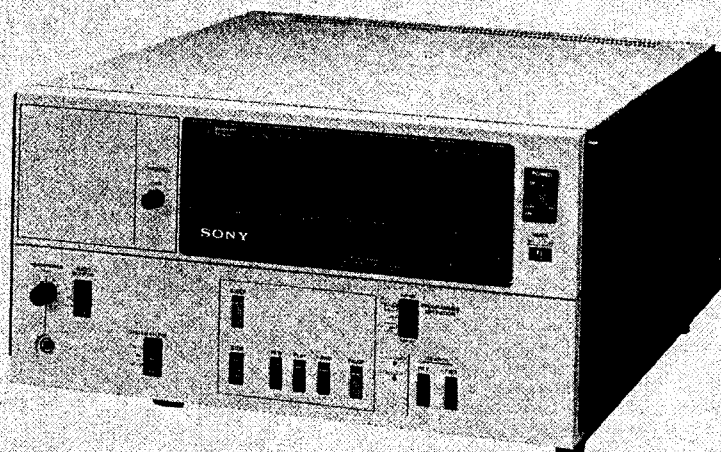


SONY - SP0178

VP-5030

Revised-3

This manual includes the informations of Supplement-1, 2 and 3 that have been published already.



SONY®
SERVICE MANUAL

SPECIFICATIONS

GENERAL

Video recording:	Rotary two-head helical scan system Luminance: fm recording Color signal: converted subcarrier direct recording
Video signal system:	CCIR standards, PAL or SECAM color EIA standards, NTSC _{4.43} color
Power requirements:	110 - 240 V ac $\pm 10\%$, 50/60 Hz $\pm 10\%$
Power consumption:	55 W
Operating position:	Horizontal
Storage temperature:	-20°C to +60°C (-4°F to +140°F)
Operating temperature:	5°C to 40°C (41°F to 104°F)
Dimensions:	Approx. 446 x 237 x 516 mm (w/h/d) (17-5/8 x 9-3/8 x 20-3/8 inches) including projecting parts and controls
Weight:	Approx. 22 kg (48 lb 90 oz)
Accessory supplied:	AC power cord (1)

VIDEO

VIDEO OUT:	BNC type, x1 1.0 V(p-p) ± 0.2 V(p-p), 75 ohms, unbalanced, sync negative
TV:	8 pin, x1
Horizontal resolution:	Monochrome mode: 330 lines Color mode: 250 lines
Signal-to-noise ratio:	Monochrome mode: more than 48 dB Color mode: more than 45 dB
Sync	
SYNC IN:	BNC type, x1 4 V (2 - 5 V) (p-p), 75 ohms, unbalanced, sync negative

AUDIO

LINE CH-1, CH-2 OUT:	Phono jack, x 1 in each -5 dB (with 47 k ohm load)
AUDIO MONITOR:	Minijack, x 1 -5 dB (with 47 k ohm load)
HEADPHONES:	Stereo phone jack, x1 for 8 ohm headphones Level: adjustable (-24 dB to -46 dB)
TV:	8 pin, x1
Signal-to-noise ratio:	Better than 48 dB (at 3% distortion) Both channels 1 and 2
Frequency response:	50 - 15,000 Hz (channels 1 and 2)

SPECIAL FUNCTIONS

Pause:	A still picture is obtained, with automatic long pause function
Search:	Possible (about 5 times of normal speed in forward and reverse directions)
Tracking control:	Possible
Skew control:	Possible
Sync system:	Internal and external
Dropout compensator:	Internal

TAPE TRANSPORT

Tape speed:	9.53 cm/sec. (3-3/4 ips)
Playback time:	60 min (with KCA-60)
Fast forward and rewind time:	within 4 min (with KCA-60)
Wow and flutter:	$\pm 0.25\%$ (DIN)
Tape compatibility:	U-matic video cassette tape
Usable tape:	KCA, KCS type tape

RECOMMENDED VIDEO EQUIPMENT AND ACCESSORIES

Color Video Monitor Sony CVM and PVM series
Auto Search Control RX-353CE, RX-303CE, RM-300
Remote Control Unit RM-500
Cleaning Cassette KC-1C
Remote Control Cable RCC-5F
Monitor Connecting Cable VMC-3P (3 m), VMC-5P (5 m), VMC-10P (10 m)
Video Responder System VRS-110, VRP-100
RF kit RFK-660UCE/660UB/660UF/660CH
Multi Remote Control Unit RM-555
Video and Audio Distributor DA-500
Video and Audio Switcher VCS-500
VTR Selector RM-V5

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SECTION 1

GENERAL DESCRIPTION

1-1. FEATURES

Search operation: Playback at about 5-times normal speed is possible in both forward and reverse directions.

Programmed operation: Program material from the beginning of the tape to the point at which the tape counter reads "000" can be played back repeatedly. It is also possible to stop the tape automatically at the "000" point.

Still picture: When the tape is stopped with the PAUSE button during playback, a still picture can be obtained. The guard band noise is limited to the upper or lower part of the screen so that the still picture is easy to see.

Long pause mode: When the tape is stopped in the pause mode for a long period of time, the machine automatically enters the long pause mode to avoid possible damage to the tape.

Moisture detector: When moisture condenses on the video head drum, the moisture detector is activated and the machine stops to avoid possible tape damage. The AUTO OFF indicator lights to indicate moisture condensation.

Remote control and auto search: The machine can be remotely controlled with an optional remote control unit. Any point on the tape can be searched for and played back automatically using an RX-353CE or RX-303CE Auto Search Control Unit.

Logic control: The logic control system allows you to change modes without pressing the STOP button.

Full automatic rewind: The tape is automatically rewound to the beginning when it runs to the end.

Two audio tracks: Two audio tracks permits playback of stereo sound or bilingual program material.

Timer operation: With the aid of a timer (optional), playback can be started and stopped when the player is unattended.

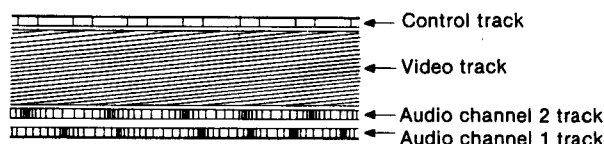
Stable playback picture: The servo system using a direct drive capstan motor and drum motor, and the newly developed digital servo IC assure a stable tape transport which reduces tape jitter.

Rack mounting: The VP-5030 is designed to be mounted in a 19-inch EIA standard rack.

No power adaptation and low power consumption: Thanks to Sony's newly-developed high efficiency switching regulator, the unit can be operated with a wide range of power voltages and frequencies without power adaptation. Power consumption is low.

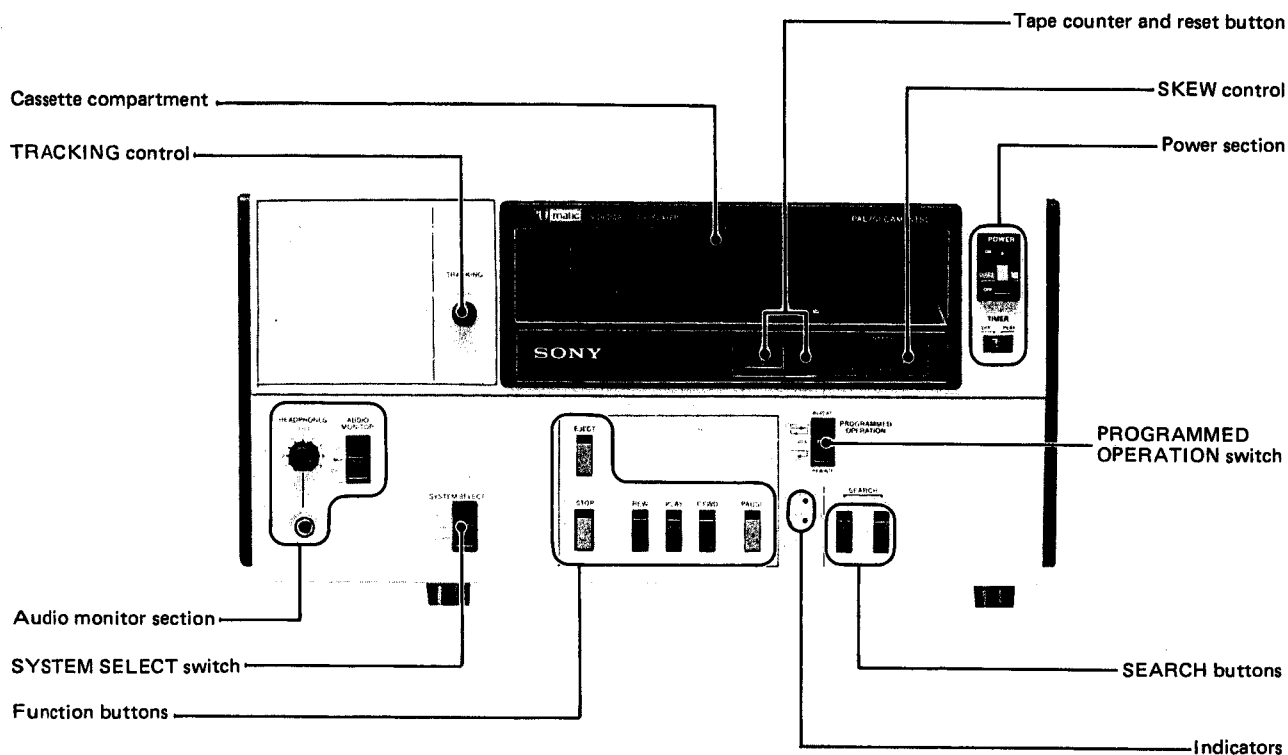
1-2. NOTE ON VIDEO CASSETTE TAPE

The video and audio signals are recorded using the full width of the tape as shown below. Because of this, the tape cannot be used in the reverse direction.



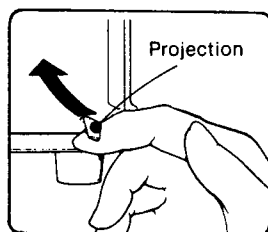
1-3. LOCATION AND FUNCTION OF CONTROLS

FRONT PANEL

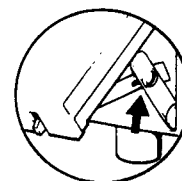
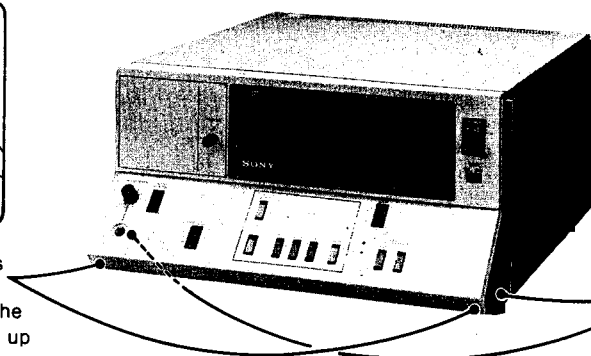


TO PUT THE OPERATION ON A SLANT

The lower half of the operation panel can be pulled out as shown below.

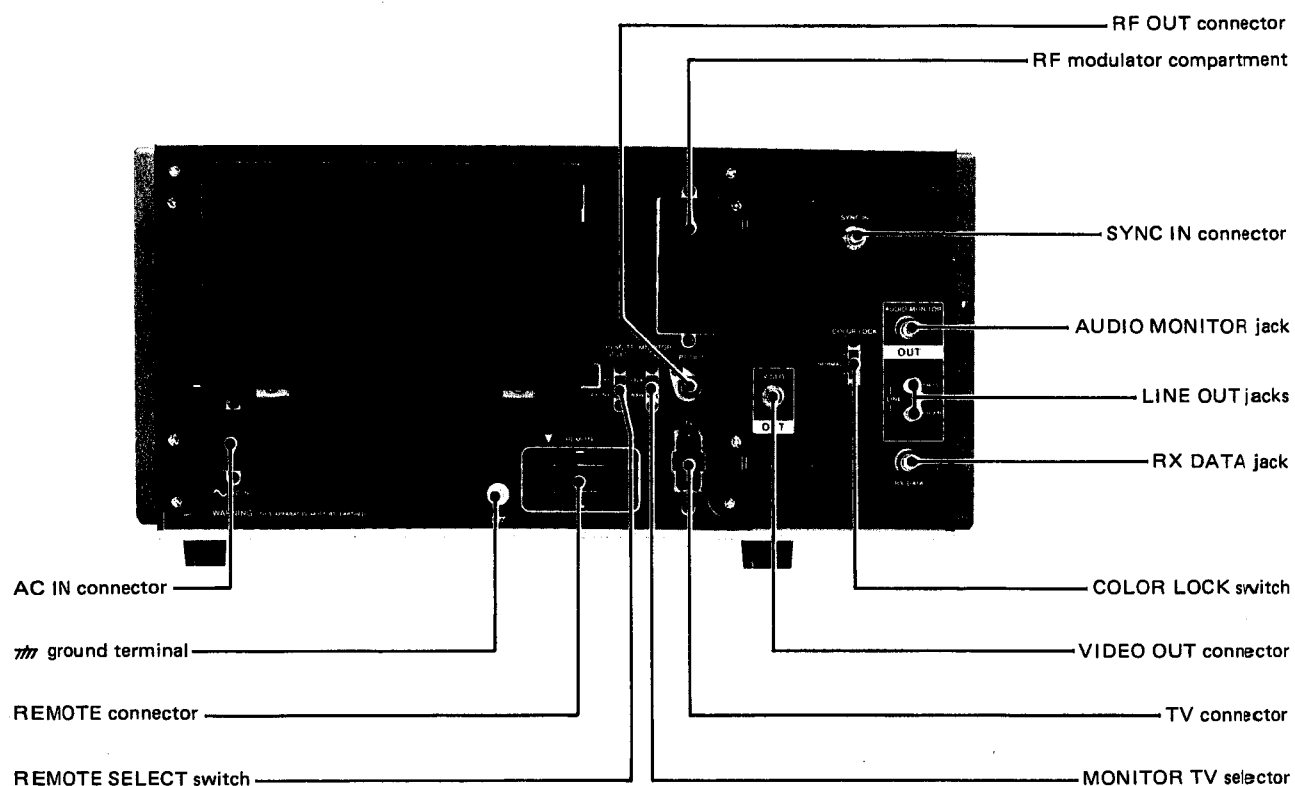


To put the panel on a slant
While pulling the projections on the bottom of the operation panel out, swing the bottom of the panel out and up until the side braces lock.



To return the panel to the original position
Push up on the side braces to unlock them and swing the panel down and back until it clicks into place.

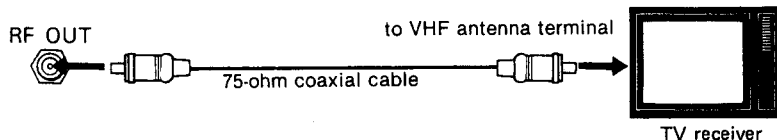
REAR PANEL



1-4. CONNECTIONS AND SELECT SW SETTING

RF OUT connector

The output signal of the RF modulator, if it is inserted, is fed out here. Using this connector, you can see a picture on a conventional TV receiver.



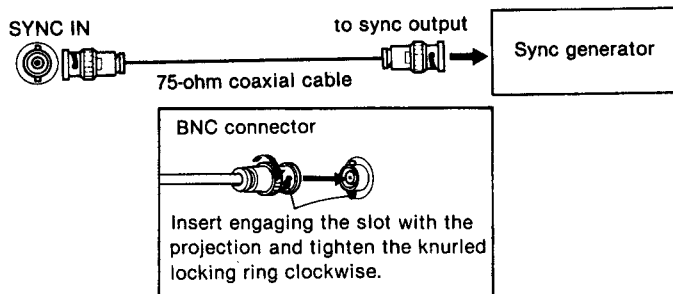
RF modulator compartment

Insert an RF modulator* (optional) here to see a picture on a conventional TV receiver.

*An RF (Radio Frequency) modulator converts the signal to be fed to the TV receiver into a UHF channel signal.

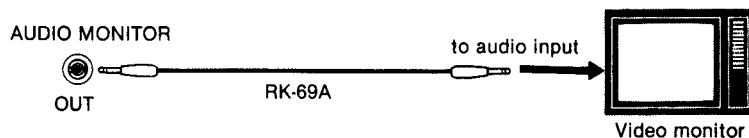
SYNC IN connector (BNC type)

Connect to the sync output of an external sync generator with the same color system of the playback tape, PAL, SECAM, NTSC_{4.43}. The player will synchronize with this signal.



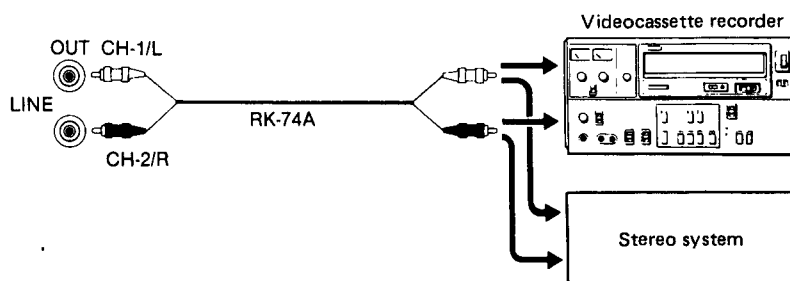
AUDIO MONITOR jack (mini type)

Connect to the audio input jack on the video monitor. The signal selected by the AUDIO MONITOR switch on the front panel is output here.



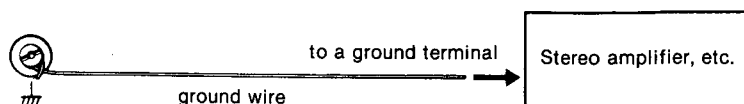
LINE OUT (audio line output) jacks (phono type)

The signals recorded on the audio channel 1 and audio channel 2 are output here.



ground terminal

To reduce hum in the audio signal, connect this terminal to a ground terminal of the connected audio equipment.



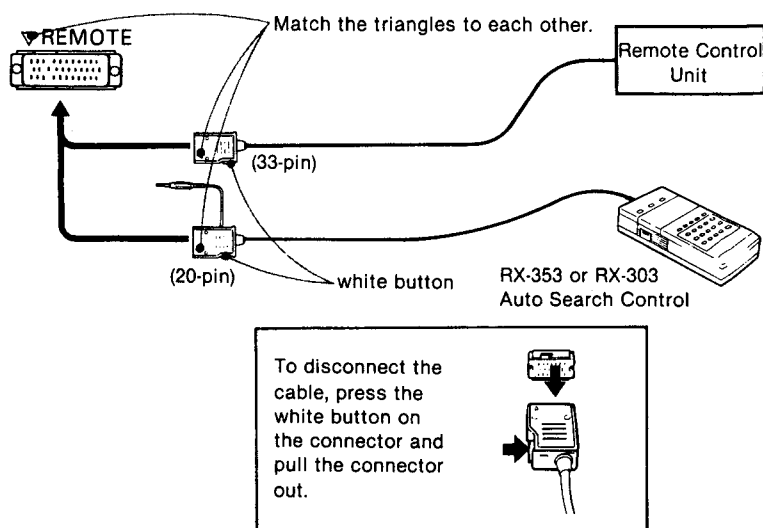
REMOTE connector (33-pin)

Connect an optional auto search control unit or remote control unit to this connector.

● Before connecting the remote control cable, check whether the connector is male or female.

● The REMOTE connector accepts a 20-pin connector. A plug adaptor is unnecessary.

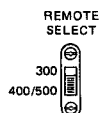
● When a unit which is equipped with a 20-pin connector is connected to the REMOTE connector, do not use the REV button on the unit. If you do, the player will malfunction.

**REMOTE SELECT switch**

Set this switch depending on the type of the remote control unit or auto search control unit used.

300: When an RM-300, RX-303CE or RX-353CE is used.

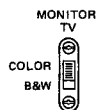
400/500: When an RM-420, RM-555, or RM-500 is used.

**MONITOR TV selector**

Set this selector according to the type of video monitor used.

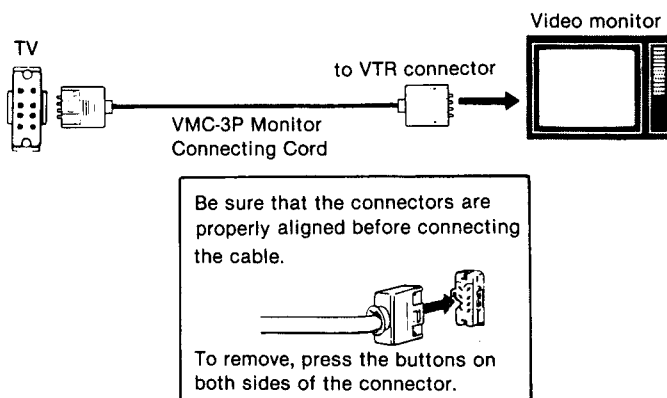
COLOR: For a color monitor.

B & W: For a black and white monitor.

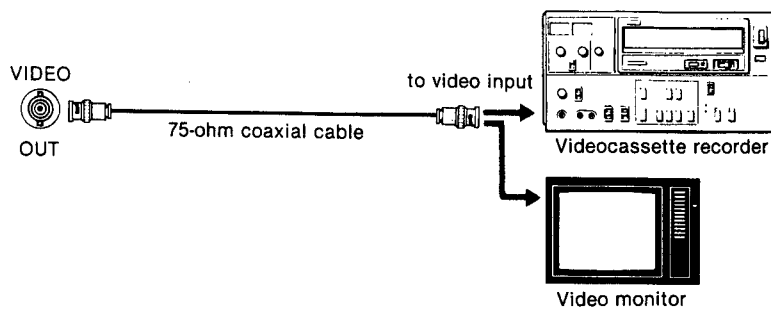
**TV connector (8-pin)**

Connect to the 8-pin VTR connector of a video monitor.

The video and audio output connections can be made with a single cable. The channel selected by the AUDIO MONITOR switch will be heard through the speaker on the video monitor.



VIDEO OUT connector (BNC type)
The video signal is output here.

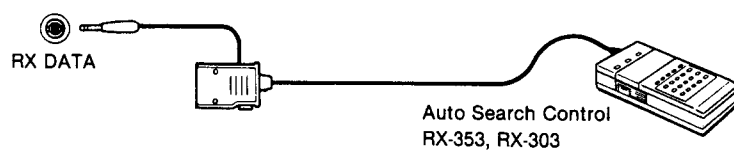


COLOR LOCK switch

As a rule, set to NORMAL. If the playback picture has no color or if the hue is abnormal, set the switch to the upper or lower position marked [•].

RX DATA jack (mini type)

For reading the data recorded on the tape by the auto search control unit.

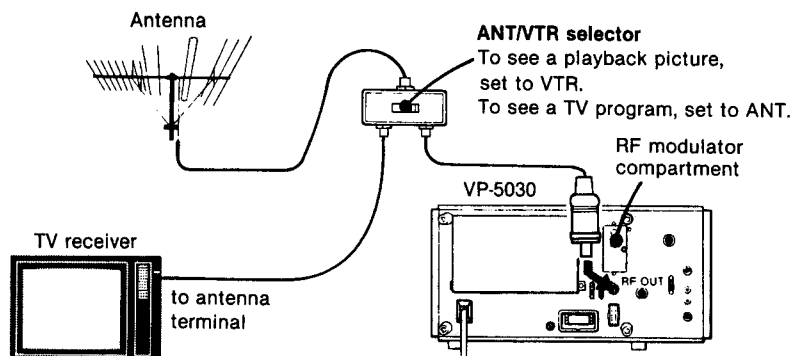


1-5. TO SEE A PICTURE ON A SLANT

A playback picture can be seen on a conventional TV receiver when an RF modulator (optional) is installed into the VP-5030.

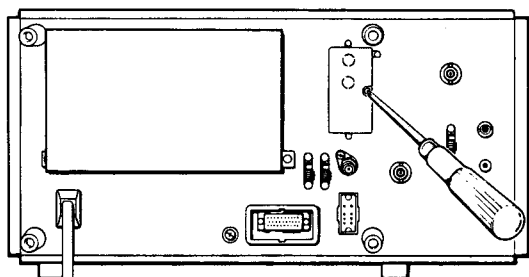
It is, of course, possible to see a TV program as usual.

CONNECTIONS

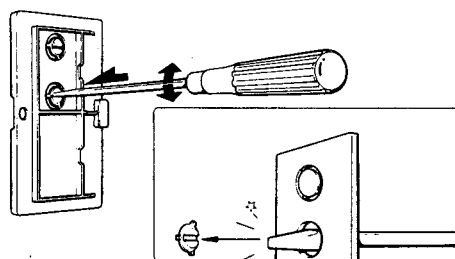


INSTALLATION OF AN RF MODULATOR

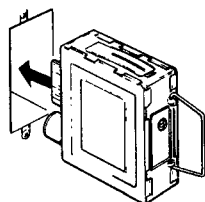
1. Loosen the screw on the RF modulator compartment, and remove the lid.



- Push to break off the hole and the channel select switch can be reset without removing the RF modulator compartment lid.



2. Install the RF modulator into the compartment aligning the direction properly.



Channel select switch

3. Replace the lid.

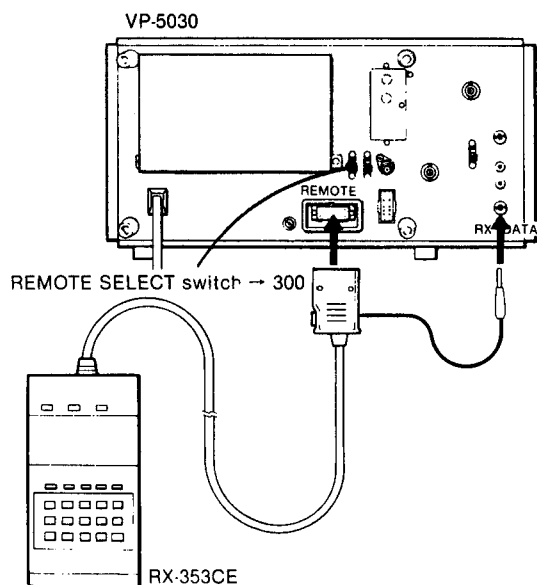
- For details, please refer to the instruction manual furnished with the RF kit.

OPERATION

1. Set the ANT/VTR selector on the antenna selector to **VTR**.
2. Turn the TV receiver on, and select the output channel of the RF modulator.
3. Turn the player on.
4. Insert a recorded video cassette.
5. Set the AUDIO MONITOR switch to the appropriate position.
6. Press the PLAY button. You can see a playback picture on a TV receiver.

1-6. AUTO SEARCH CONTROL

With the RX-353CE or RX-303CE Auto Search Control (optional), any point on the tape designated in minutes and seconds can be automatically located and played back. In addition, up to 8 segments can be automatically played back in any desired order. Refer to the Auto Search Control's instruction manual for details.



Notes

- Setting and controls on the player have priority over those on the Auto Search Control.
- Be sure to turn the power of the player off when connecting and disconnecting the 20-pin connector.
- Set the REMOTE SELECT switch to 300 and the PROGRAMMED OPERATION switch to OFF when the Auto Search Control is used.
- Do not run the tape with the function buttons or SEARCH buttons on the VP-5030 when the Auto Search Control is used. This is because the indication on the tape position indicator of the Auto Search Control and the actual tape position do not correspond correctly when the VP-5030 is used to run the tape.

1-7. PROGRAMMED OPERATION

Using the PROGRAMMED OPERATION switch, you can locate a particular point quickly or repeatedly play back a particular portion.

- For normal playback, set the PROGRAMMED OPERATION switch to OFF.

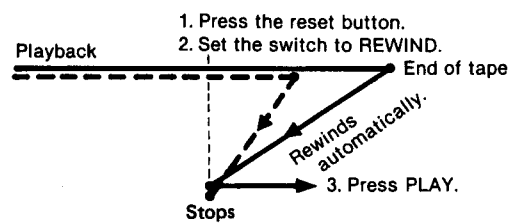
To locate a particular point

1. Play the tape back and press the reset button at the desired point.
2. Set the PROGRAMMED OPERATION switch to REWIND

At end of the tape, the tape will automatically rewind to the point where the tape counter reads "000" and stop.

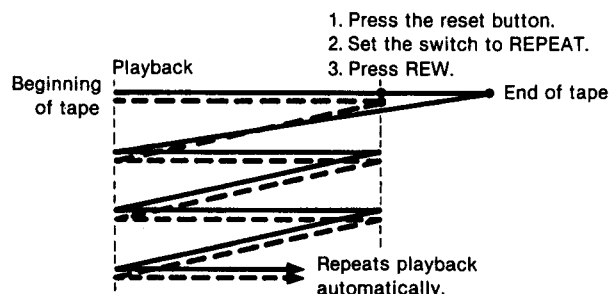
- To rewind the tape before the tape reaches the end, press the REW button. The tape will automatically rewind to the "000" point and stop as illustrated by the dotted arrow.

3. Press the PLAY button to play the tape back from that point



To repeat playback between the beginning of the tape and a particular point

1. Search for the point where playback is to stop and press the reset button at that point.
 2. Set the PROGRAMMED OPERATION switch to REPEAT
- START 000
3. Press the REW button to rewind the tape. The tape rewinds to the beginning of the tape, then the recorder plays back the designated portion on the tape repeatedly.

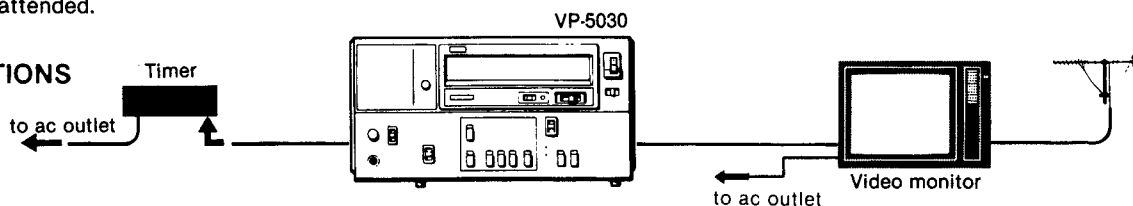


- When the reset button is pressed at the end of the tape, the tape rewinds to the beginning of the tape and the player plays back the entire tape repeatedly.

1-8. TIMER OPERATION

Using an optional timer, you can start and stop playback while the player is unattended.

CONNECTIONS



TIMER PLAYBACK

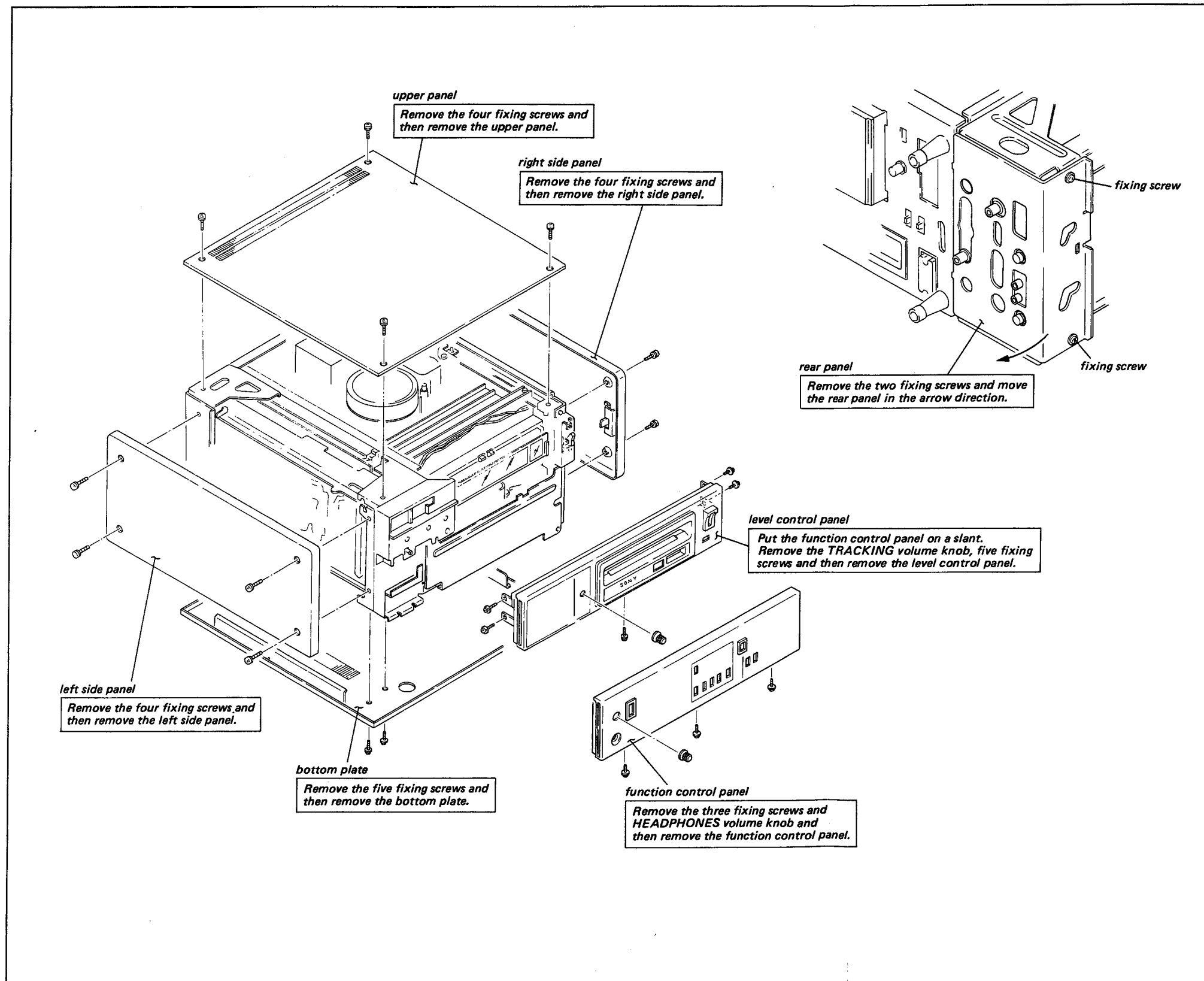
1. Turn the player on and make the preparations for playback.
2. Set the time to start and stop playback on the timer.
3. Set the TIMER switch to PLAY.

The playback will begin at the time set on the timer.

● Be sure to disconnect the RX-353CE or RX-303CE auto search control unit from this unit or the timer playback will not be activated.

SECTION 2 SERVICE INFORMATION

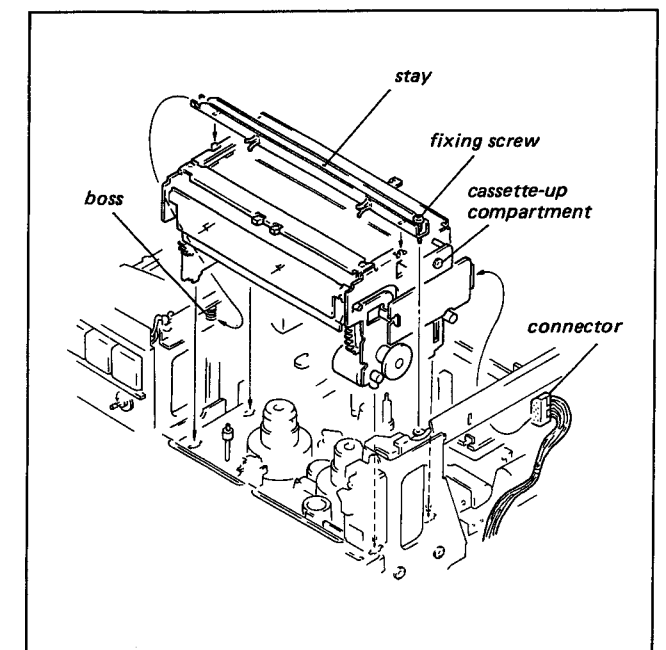
2-1. DISASSEMBLY OF CABINET



2-2. CASSETTE-UP COMPARTMENT REMOVAL AND INSTALLING PROCEDURES

- (1) Remove the upper panel.
- (2) Disconnect the connector of cassette-up compartment.
- (3) Loosen the fixing screw of the right-end of stay.
- (4) Remove the stay from boss of side panel.
- (5) Remove the cassette-up compartment.

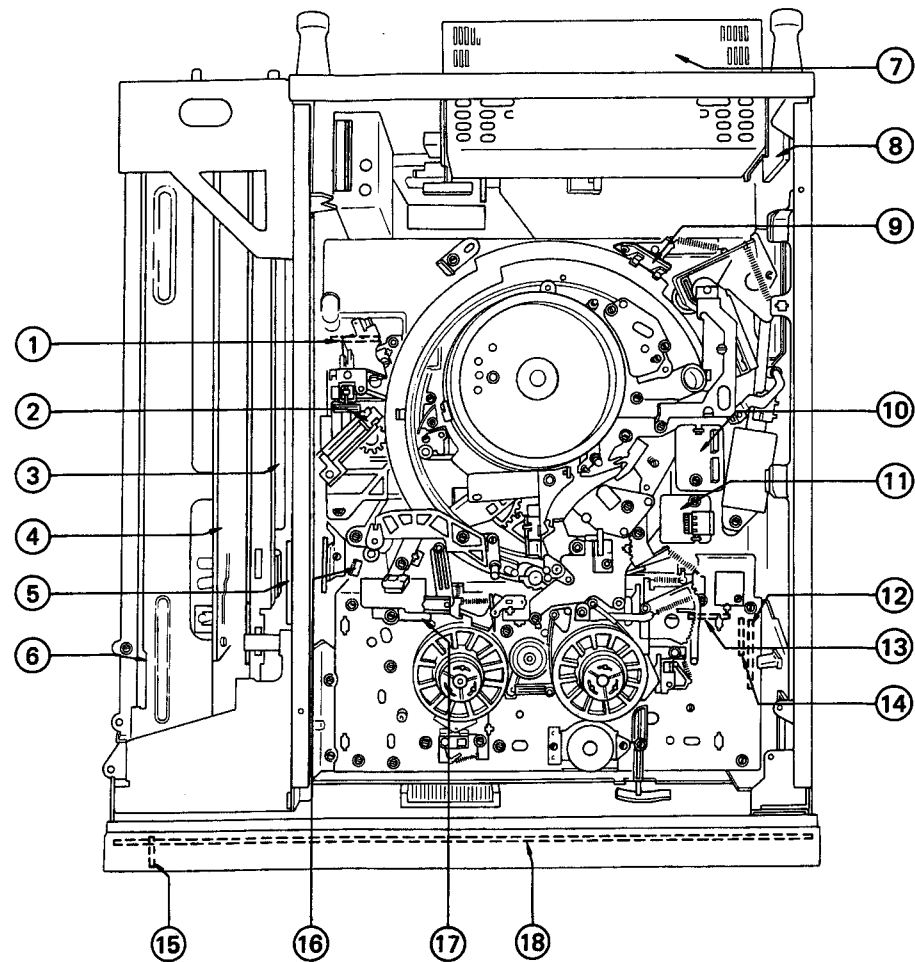
Reverse the removal procedure for installing the cassette-up compartment.



2-3. MAIN PARTS LOCATION

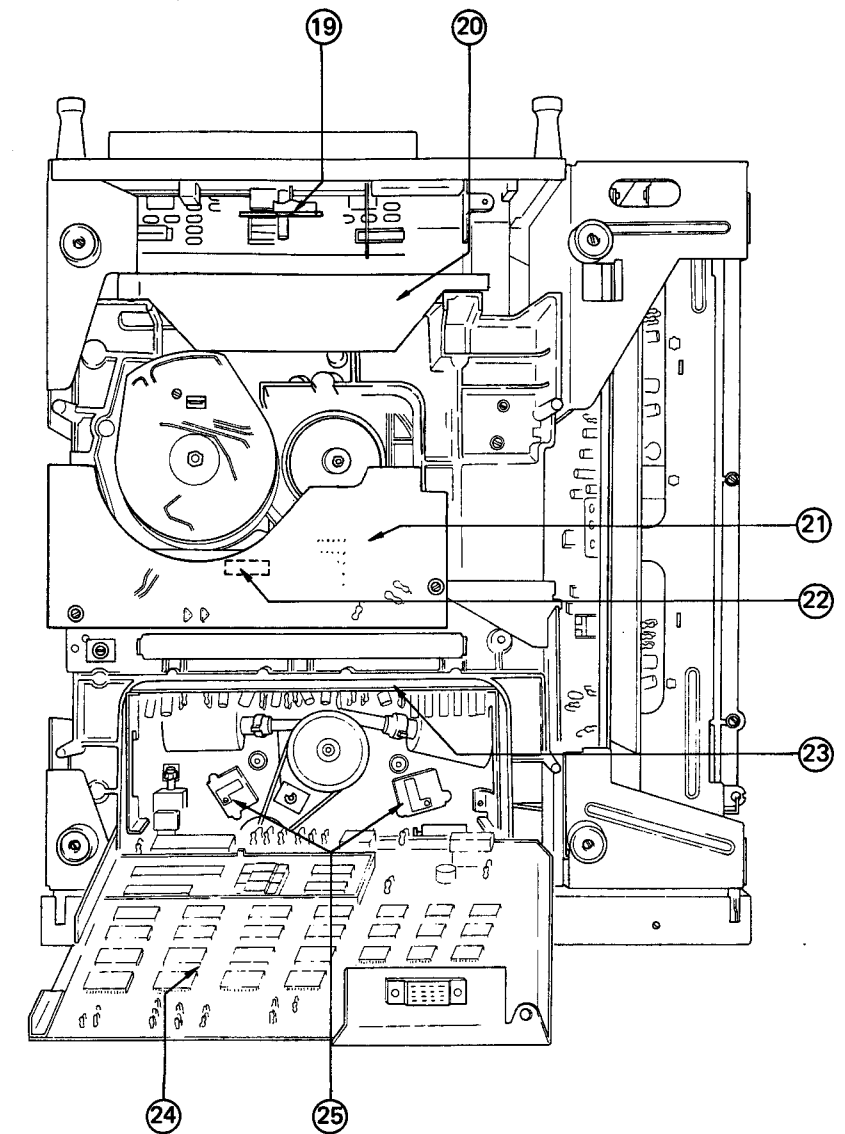
2-3-1. Location of the Printed Circuit Boards

< TOP VIEW >



- | | |
|-------------------------------|--|
| ① LM-9 BOARD | ⑩ AH-3 BOARD |
| ② PH-5 BOARD | ⑪ EC-19 BOARD |
| ③ VP-13 BOARD | ⑫ CC-9 BOARD (Assembled into cassette-up compartment) |
| ④ SV-44C BOARD | ⑬ CC-10 BOARD (Assembled into cassette-up compartment) |
| ⑤ CN-42 BOARD | ⑭ CC-11 BOARD (Assembled into cassette-up compartment) |
| ⑥ AP-7 BOARD | ⑮ HP-6 BOARD |
| ⑦ UR-02 (Switching regulator) | ⑯ SW-50 BOARD |
| ⑧ DC-13 BOARD | ⑰ PH-4 BOARD |
| ⑨ FR-11 BOARD | ⑱ KY-21C BOARD |

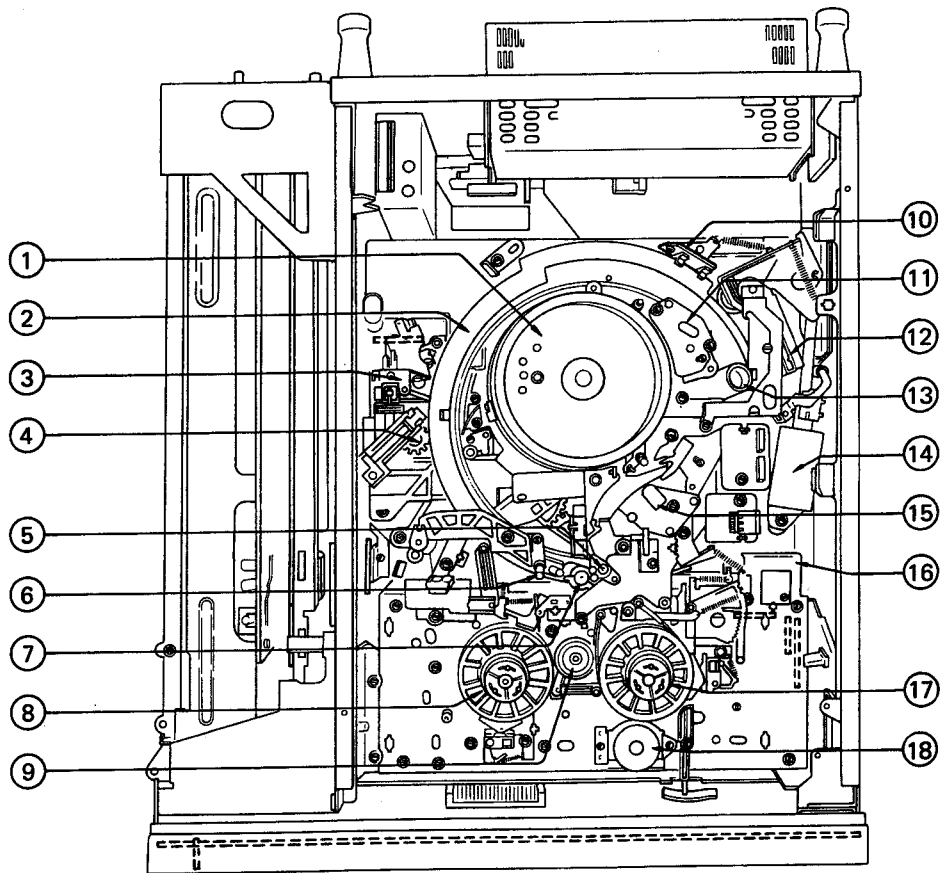
< BOTTOM VIEW >



- | |
|-------------------------|
| ⑲ AC-35 BOARD |
| ⑳ DR-17B BOARD |
| ㉑ MR-8A OR MR-11B BOARD |
| ㉒ PT-9 BOARD |
| ㉓ PD-16A BOARD |
| ㉔ SY-75A BOARD |
| ㉕ SW-43 BOARD |

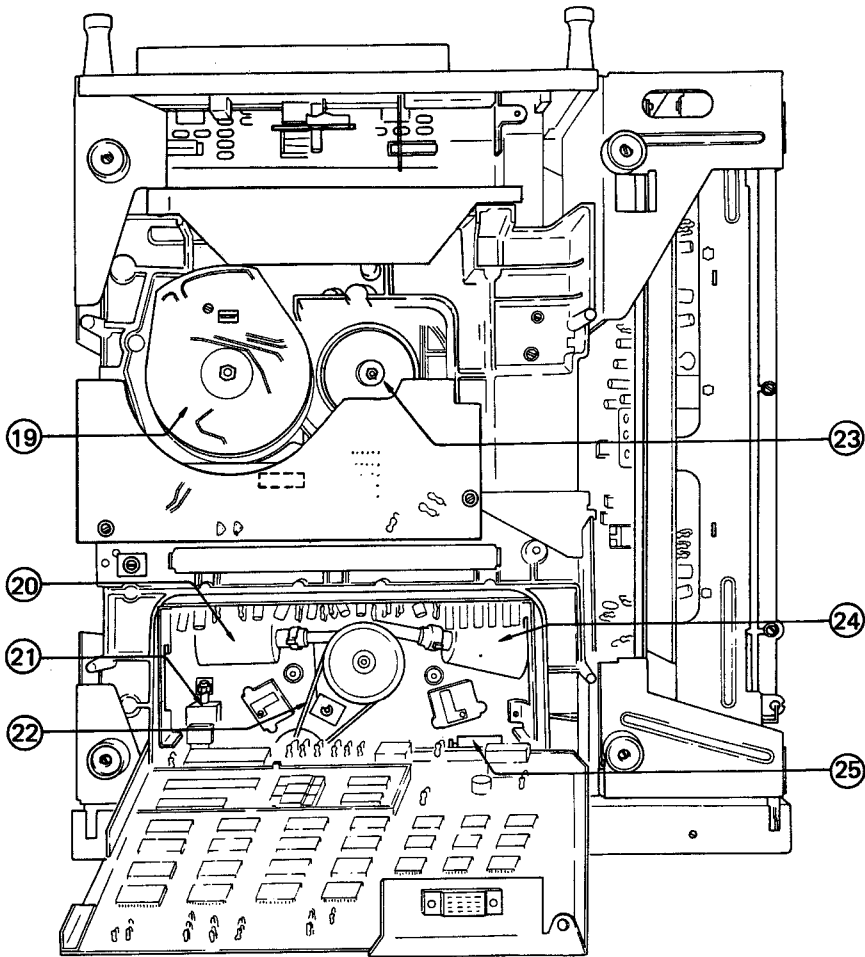
2-3-2. Location of the Mechanical Main Parts/Components

< TOP VIEW >



- | | |
|----------------------|---------------------|
| ① Head drum | ⑪ Audio/CTL head |
| ② Threading ring | ⑫ Pinch lever |
| ③ T correction guide | ⑬ Capstan shaft |
| ④ Gear box | ⑭ Pinch solenoid |
| ⑤ S drawer arm | ⑮ CTL PB head |
| ⑥ T drawer arm | ⑯ Search solenoid |
| ⑦ Pinch roller | ⑰ Supply reel table |
| ⑧ Take-up reel table | ⑱ Reel motor |
| ⑨ FF/REW idler | |
| ⑩ FR detector | |

< BOTTOM VIEW >



- | |
|--------------------------|
| ⑲ Capstan motor |
| ⑳ Supply idler solenoid |
| ㉑ Supply brake solenoid |
| ㉒ Belt for FF/REW idler |
| ㉓ Drum motor |
| ㉔ Take-up idler solenoid |
| ㉕ Take-up brake solenoid |

2-4. SPARE PARTS

- 1. Safety Related Components Warning.
Components identified by shading marked with **A** on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear in this manual or in service bulletins and service manual supplements published by Sony.
- 2. Replacement Parts supplied from Sony Parts Center will sometimes have a different shape from the original parts. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".
This manual's exploded views and electrical spare parts list indicate the parts numbers of "the standardized genuine parts at present".
Regarding engineering parts changes in our engineering department, refer to Sony service bulletins and service manual supplements.
- 3. Printed Components in Bold-Face type on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

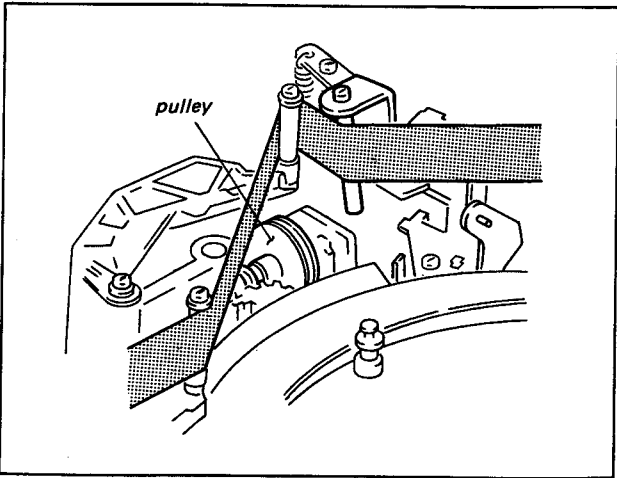
2-5. MACHINE POSITION FOR REPAIR WORK

When the system control circuit repair work is attempted or mechanical maintenance is attempted, place the machine with its left side panel on its top.

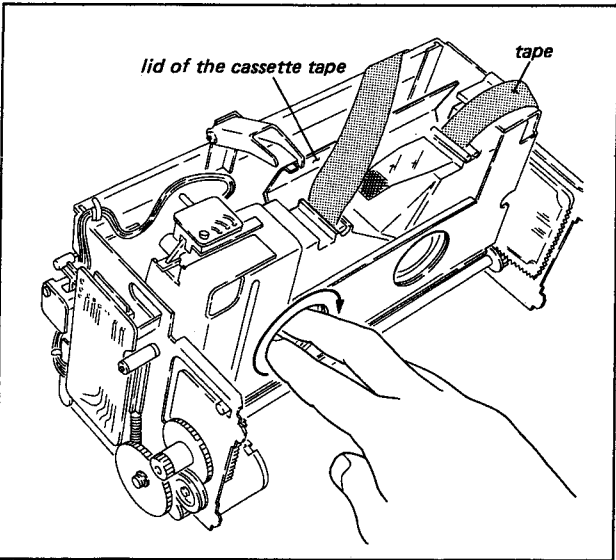
2-6. CASSETTE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

If the eject operation becomes impossible due to trouble or the cassette-up compartment does not rise when the eject operation takes place, the cassette tape can be removed from the set by the procedures described below.

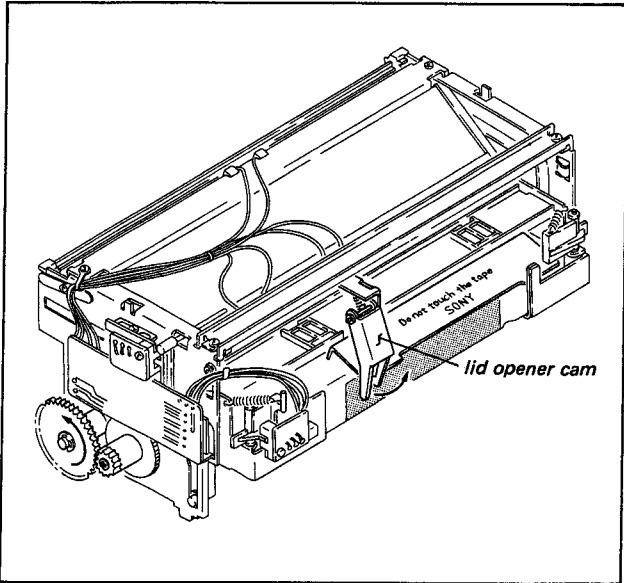
- (1) Turn off the POWER.
- (2) Remove the upper panel.
- (3) Turn the white colored pulley of the gear box in the clockwise direction with finger until the threading ring places into the FR-STOP position.
(The threading ring moves in the unthreading direction. But the tape remains at the position of threading completion.)



- (4) Disconnect the connector of the cassette-up compartment.
- (5) Loosen the right-end fixing screw of the stay, and remove the stay from the boss of the side panel.
- (6) Bring up the cassette-up compartment with the cassette tape in it slowly. Remove the tape remaining in the set carefully so that it does not damage.
- (7) Hold the cassette tape lid so that it does not close. Wind the tape into the cassette tape by turning the reel hub on the back of the cassette tape with finger.



- (8) Raise the cam for opening the lid and close the cassette tape lid.



- (9) Remove the tape from the cassette compartment.
- (10) Turn the gear on the right side of the cassette compartment counterclockwise direction by hand in order to place the cassette compartment into the up state.
- (11) Locate the cause of the trouble and remedy the problem.

2-7. TO OPERATE THE MACHINE WITHOUT INSTALLING CASSETTE TAPE

- (1) Remove the cassette-up compartment referring to sec. 2-2. (Tape beginning sensor and tape end sensor are disabled according to disconnect the connector of cassette-up compartment.)
- (2) Turn off the POWER. (The machine is put into the FR-STOP mode automatically.)
- (3) The machine can be placed into the desired mode by pressing the function button to corresponding to the mode.

2-8. TAPE SLACK DETECTOR

If the tape is not taken up and tape slack is occurred in the machine, these conditions are detected with the reel rotation detector under the reel table. The reel rotation detector is composed with the slit of the reel table and the photointerrupter. If the reel table is stopped its rotation more than 0.3 sec. in all modes, the reel rotation detector circuit detect as the tape slackes in the machine, and generates the auto stop signal.

2-9. FIXTURE

Description	Part Number
Drum Eccentricity Gauge (3)	J-6001-820-A
Drum Eccentricity Gauge (2)	J-6001-830-A
Drum Eccentricity Gauge (1)	J-6001-840-A
Drum Eccentricity Gauge (4)	J-6001-930-A
Dihedral Adjusting Screw	J-6002-290-A
Flatness Plate	J-6009-830-A
Reel Table Height Check Base Jig	J-6130-010-A
Reel Table Height Check Jig	J-6130-020-A
Pinch Lever Adjustment Jig	J-6150-020-A
Cleaning Fluid	Y-2031-001-0
Cleaning Piece	2-034-697-00
Torque Measurement Tape (100 mm dia.)	3-702-215-01
Back Tension Adjustment Jig	3-702-216-01
Sony Oil	7-661-018-01
Tension Scale (50 g full scale)	7-732-050-20
Tension Scale (100 g full scale)	7-732-050-30
Tension Scale (200 g full scale)	7-732-050-40
Tension Scale (500 g full scale)	7-732-050-50
Alignment Tape, RR5-2SA-PAL	8-960-015-63
Thickness Gauge	9-911-053-00
Head Demagnetizer, HE-4	Standard products.

2-10. PRINTED CIRCUIT BOARD

The circuit board information is provided below.

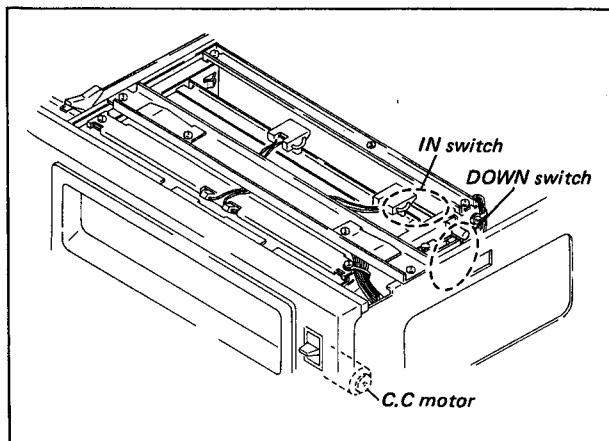
SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VP-13	Luminance and Chrominance Signal Demodulator
AUDIO	AP-7	Audio PB Amplifier
	HP-6	Headphones Level Control/Headphones Jack
	EC-19	CTL PB Head
	AH-3	Audio PB and CTL PB Head
SERVO	SV-44C	Drum/Capstan Speed and Phase PWM Servo
	DR-17B	Drum/Capstan Motor Driver
POWER SUPPLY	AC-35	AC Input
	UR-02	Switching Regulator
	DC-13B	Power Supply and Regulator
SYSTEM CONTROL	FR-11	Threading Ring Mechanical Position Detector
	PH-4	Tape Tension Detector
	PH-5	Tape Beginning Sensor Tape End Sensor
	KY-21C	Function Key Board Display Driver Mode/Monitor Select
	MR-8A MR-11B	Threading/Cassette Compartment Motor Driver Reel Motor Control and Driver Search/Pinch Solenoid Driver
	PD-16A	Take up Idler/Brake and Supply Idler/Brake Solenoid Driver
	SW-43	Take up Reel Rotation Detector Supply Reel Rotation Detector
	LM-9	Threading Motor
	SW-50	Unthread End Detector
	CC-9	Cassette Compartment Motor/Pilot Lamp
	CC-10	Cassette in Detector
	CC-11	Cassette Down Detector
	SY-75A	System Control
	PT-9	Reel Motor Power Driver
	CN-42	Connection Board

2-11. CASSETTE-UP COMPARTMENT OPERATION

The cassette insertion system in the VP-5030 is a front access system. The cassette compartment drops automatically after the cassette tape has been inserted into the cassette compartment and threading action is started after the cassette is seated in the home position.

The timing of the electronic switches and motor are referring sec. 2-13.

The cassette down switch, cassette in switch and cassette compartment motor operates as follows:

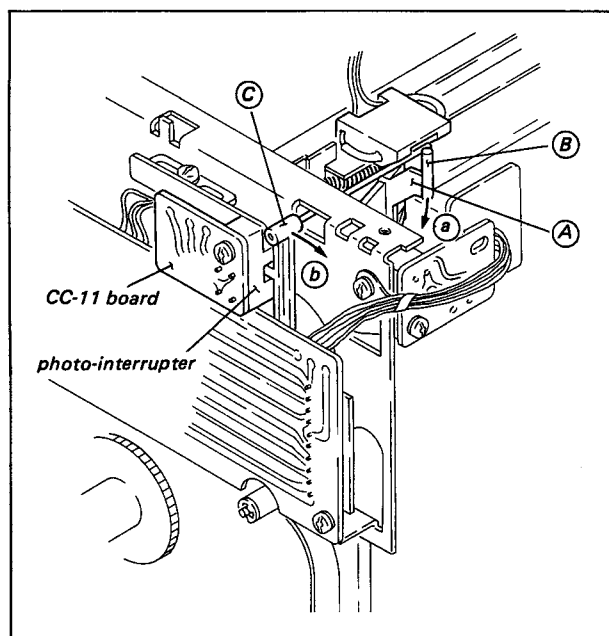


(1) Cassette Down Switch

The cassette tape is inserted by hand and then the cassette pushing lever (called (A) for making the sentence simple) moves in the direction indicated by arrow (a).

The down switch arm (called (C)) which has been held by the pin (called (B)) of the (A) moves in the direction shown by arrow (b) with the movement of (A), and the shutter of (C) opens the photo-interrupter on the CC-11 board.

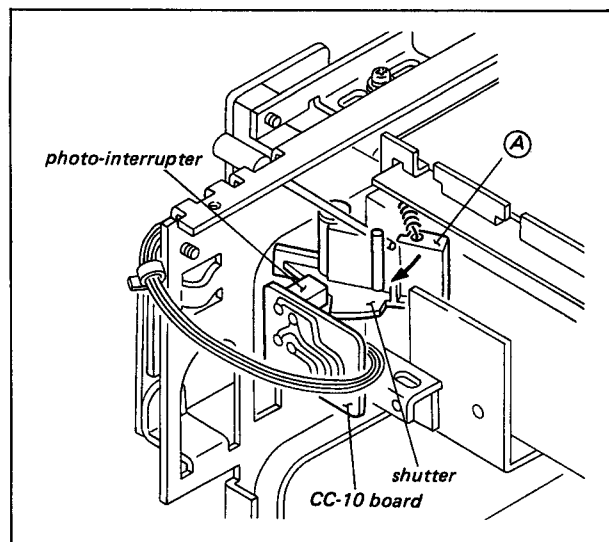
Then the DOWN switch turns to "L".



(2) Cassette In Switch

The cassette tape is inserted by hand further after the DOWN switch operates (until the cassette is stopped).

The (A) shutter covers the photo-interrupter on the CC-10 board and the IN switch turns to "H".



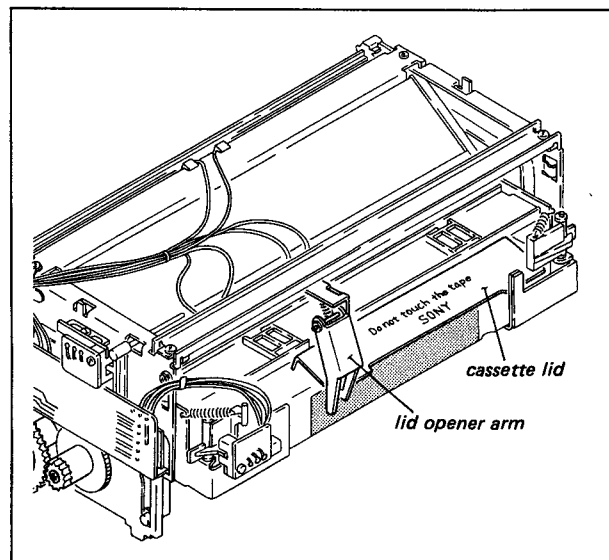
(3) Cassette Compartment Motor (C.C. Motor)

When the IN switch turns to "H" after the cassette insertion, about 11.3 V is impressed on the C.C. motor via the CC-9 board and the motor starts. The power of the motor moves the cassette compartment through the belt and the gears.

(4) Cassette Tape Lid Opener

When the cassette tape is inserted, the C.C. motor rotates, and the cassette compartment moves.

The lid opener arm holds the bottom section of the cassette lid at the point where the horizontal movement of the cassette compartment changes to the vertical movement. The lid is opened following with the downward movement of the cassette compartment.



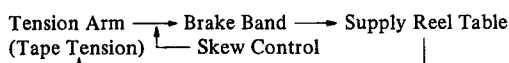
2-12. TAPE TENSION CONTROL MECHANISM

The tape tension control mechanism of VP-5030 is composed with the mechanical and electrical tape tension control mechanisms.

- (1) The tape tension control mechanism in normal playback, FWD search and unthreading modes (when the take-up reel table rotates in the counterclockwise direction (except FF mode)) is as follows:

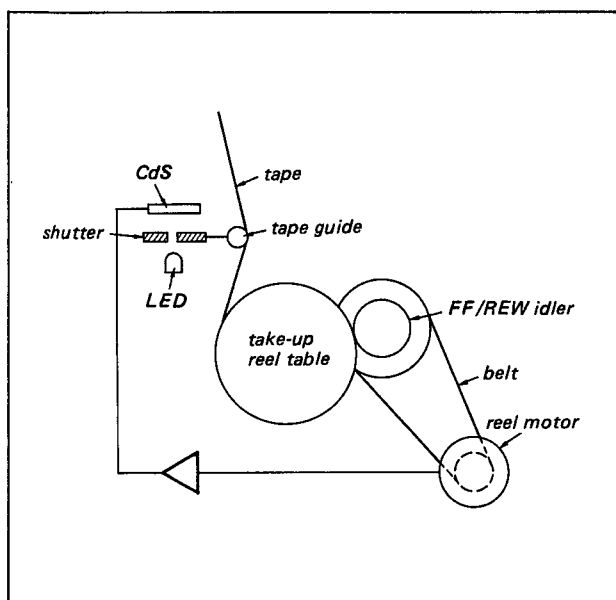
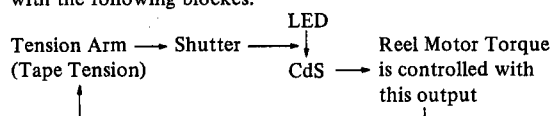
- (i) Tape feeding side (supply reel table side)

The tape back tension control mechanism of the tape feeding side is the same as the conventional VTR. This back tension control mechanism is the mechanical tape tension control mechanism.



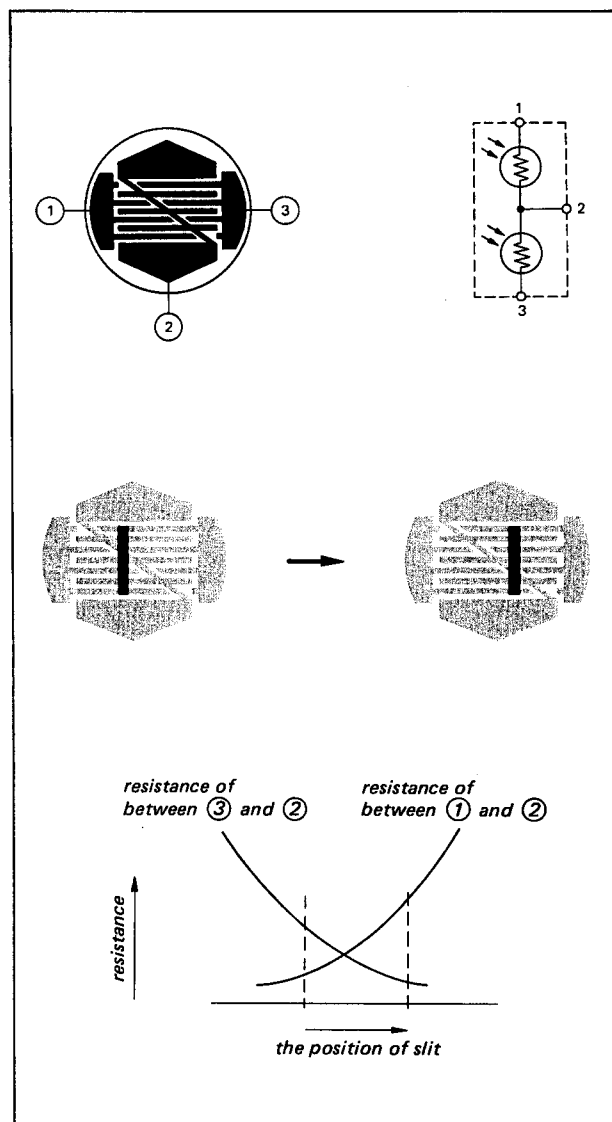
- (ii) Tape taking-up side (take-up reel table side)

The tape tension of the take-up side is controlled with the electrical tape tension control mechanism. The R brake shoe is released from the take-up reel table in this mode. The electrical tape tension control mechanism is composed with the following blocks.



The light emitted by an LED is received by the CdS detector element through a slit on the shutter connected with the tape guide. The electrodes' pattern of this CdS is shown in figure.

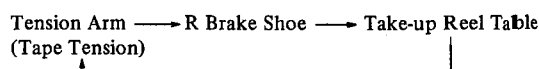
The slit moves with the tape tension change and the point where the light reflector moves. Then the resistance values between ① ~ ② and the resistance between ③ ~ ② are vary. The tape tension around the tension detector tape guide is detected by the resistance variation. This resistance variation output controls the reel motor torque and the tape tension is controlled.



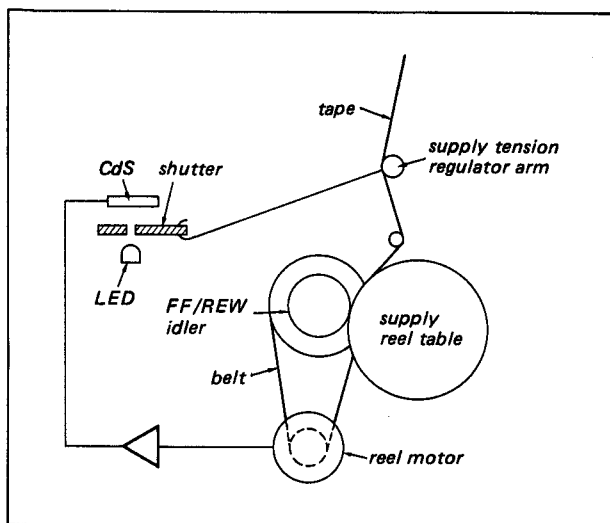
- (2) The tape tension control mechanism in REV search mode (when the supply reel table rotates in the counterclockwise direction (except REW mode)) is as follows:

- (i) Tape feeding side (take-up reel table side)

The tape is supplied from the take-up reel table in this mode. The tape tension control mechanism is the same as the supply side tape tension control mechanism as mentioned former.



- (ii) Tape taking-up side (supply reel table side)
The tape tension of the take-up side (supply reel table side) is controlled with the electrical tape tension control mechanism.

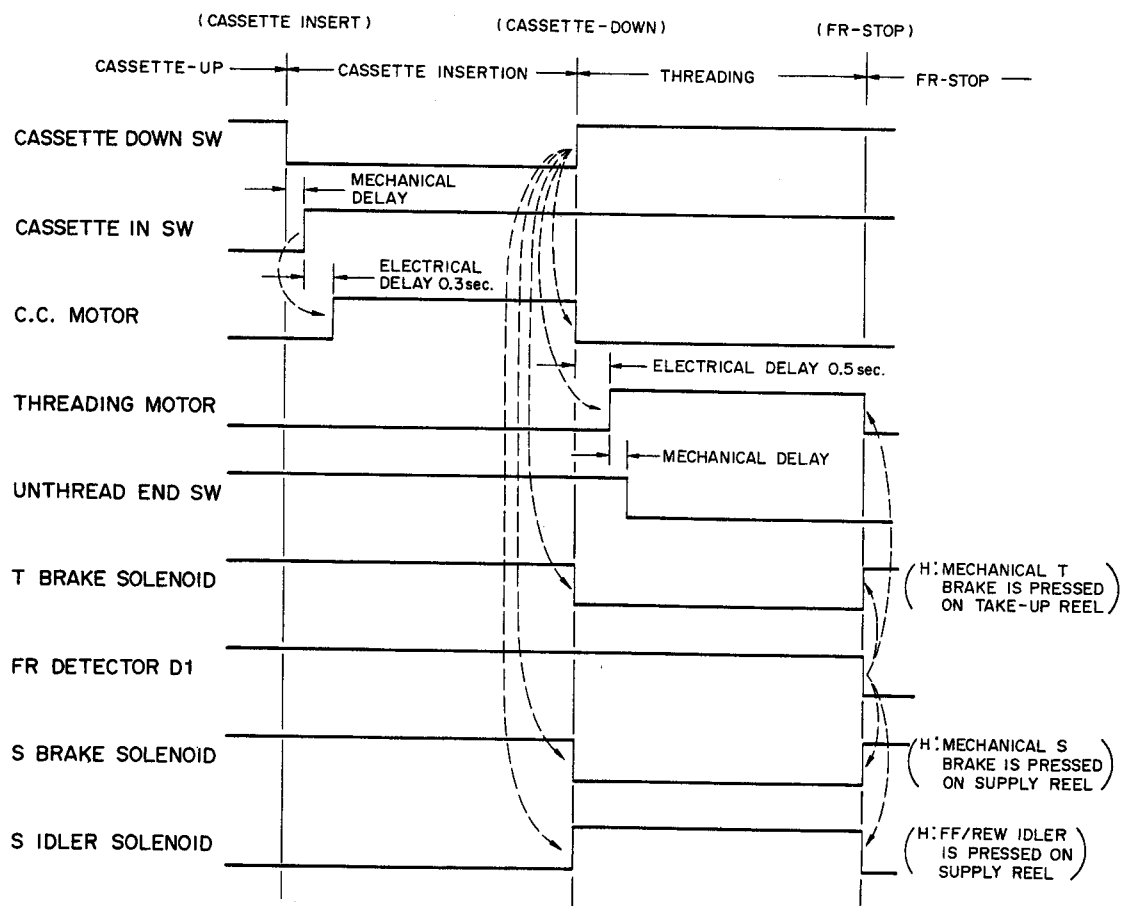


2-13. TIMING OF SWITCH, MOTOR AND SOLENOID

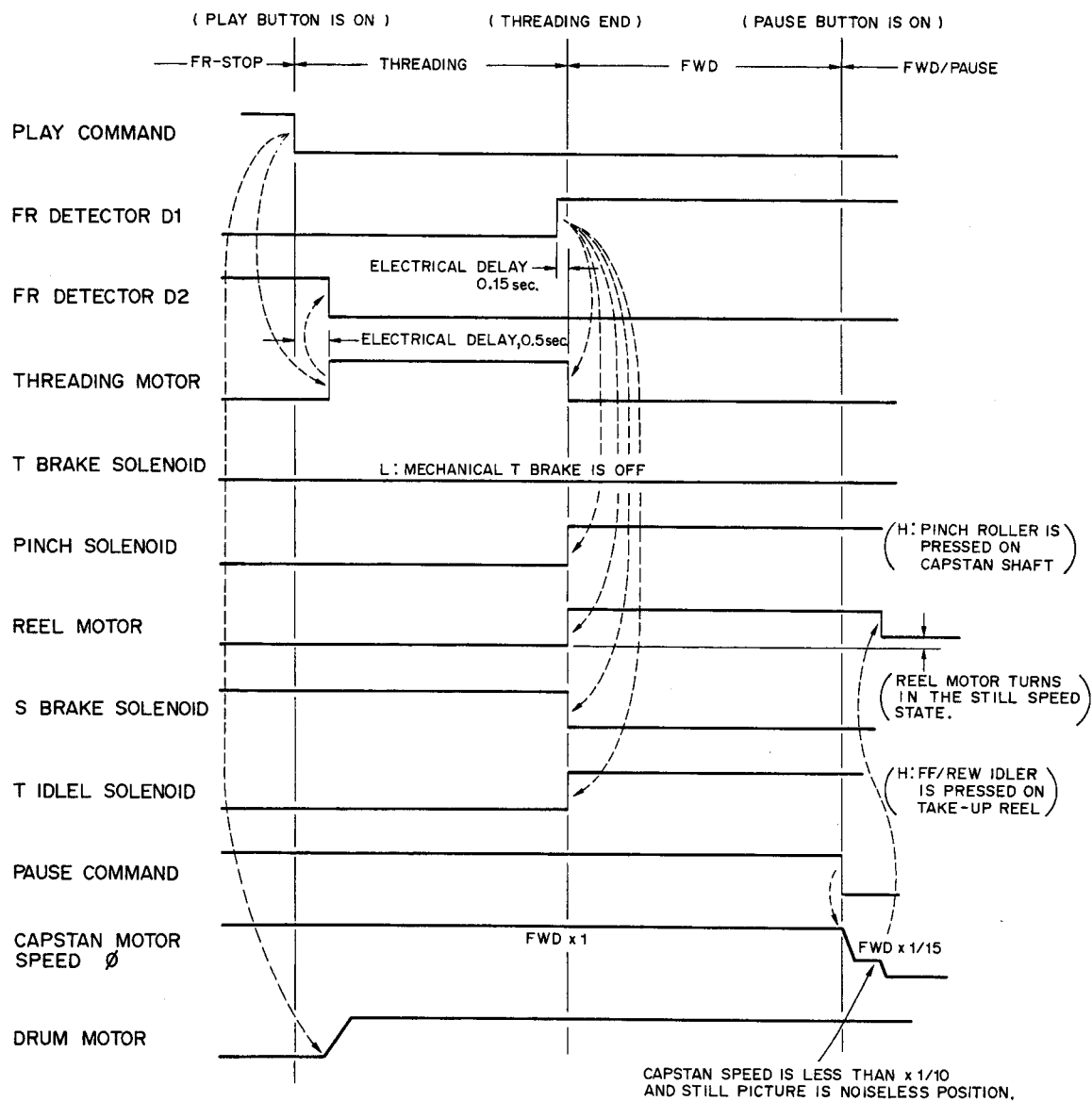
- The timing of the electronic switches, motors and solenoids in the following modes are follows.

Cassette in → FR-STOP
FR-STOP → FWD → FWD/PAUSE
FWD → FWD SEARCH → REV SEARCH
FWD → FR-STOP
FR-STOP → FF → FR-STOP
FR-STOP → EJECT Completion

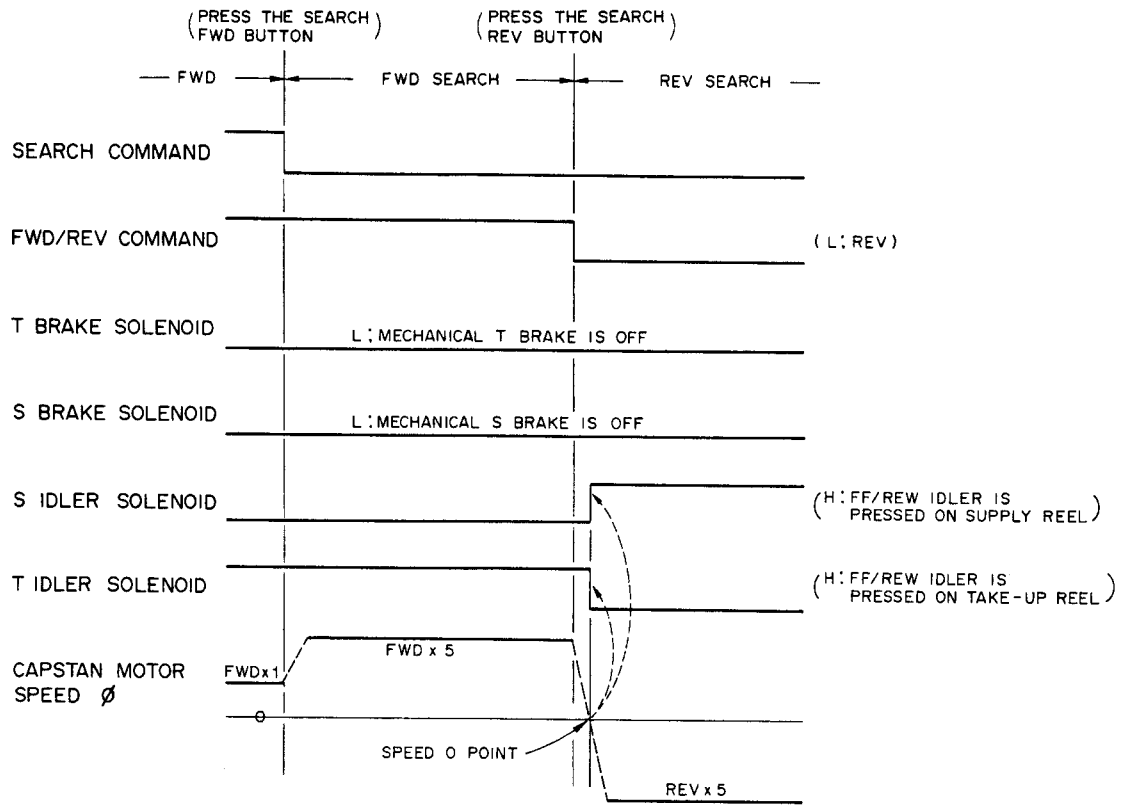
• CASSETTE - IN → FR-STOP



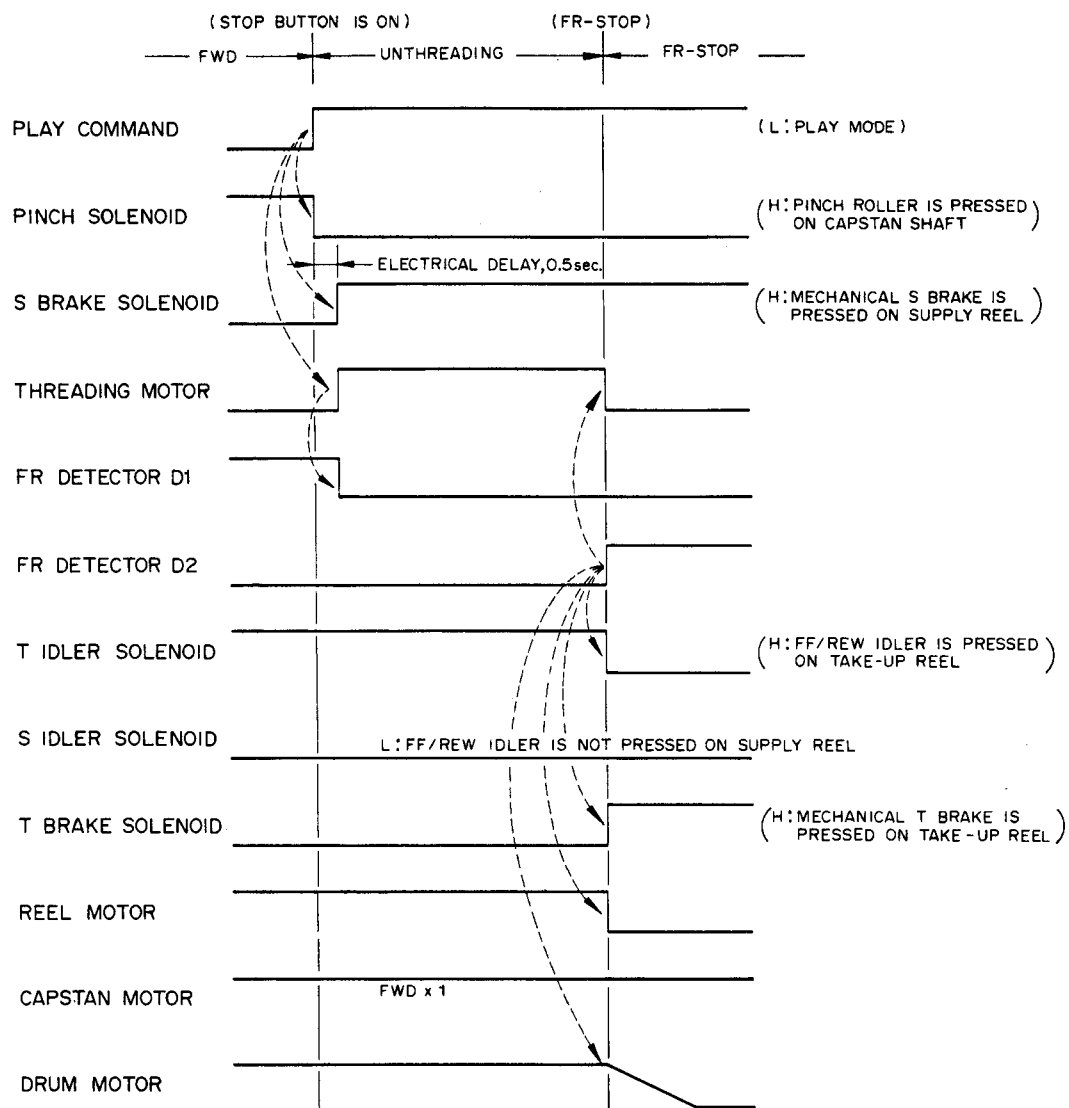
• FR-STOP → FWD → FWD/PAUSE



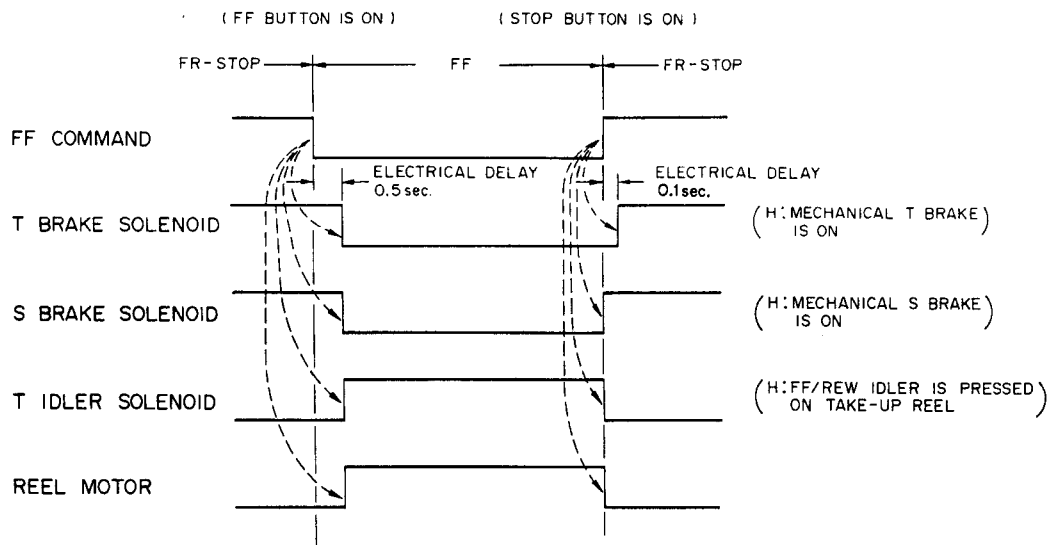
- FWD → FWD SEARCH → REV SEARCH



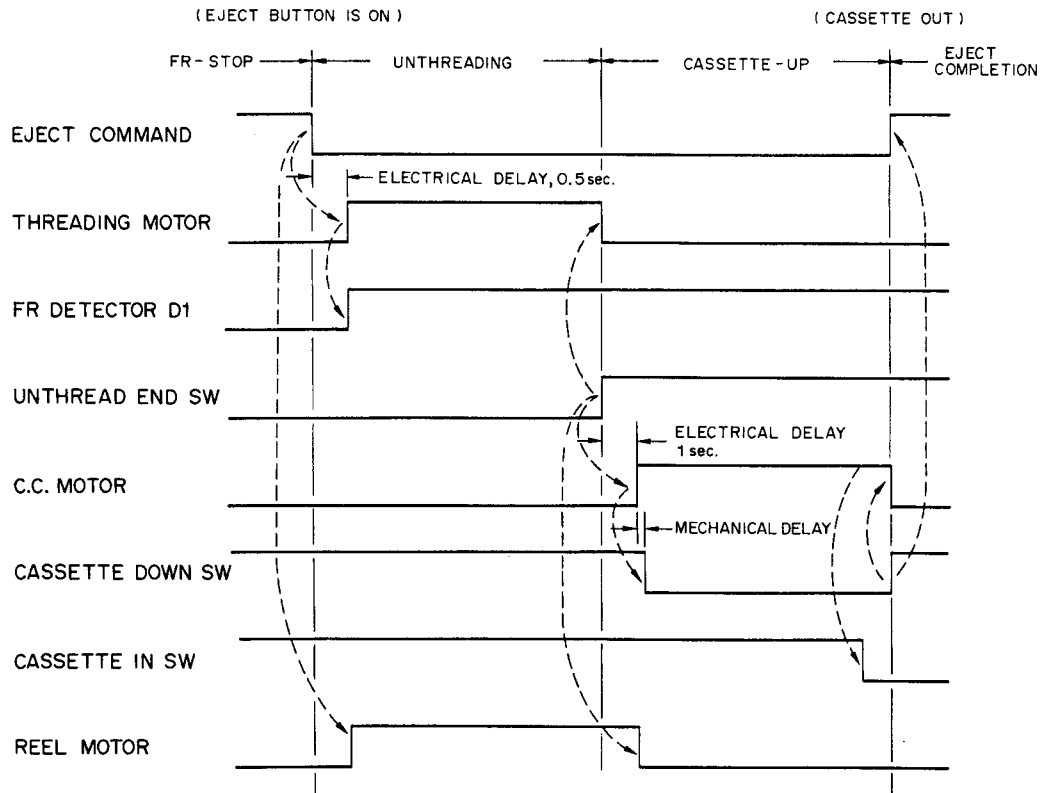
• FWD → FR-STOP



• FR-STOP → FF → FR-STOP



• FR-STOP → EJECT COMPLETION



SECTION 3

PERIODIC CHECK AND MAINTENANCE

It is recommended to perform the maintenance and the periodic check mentioned below for the best operation of the function and performance of the machine and for prolonging the lives of the machine and the tape.

3-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after the repair without regarding the operating hours of the machine.

(1) Cleaning of video heads

- Press the cleaning piece moistured with the cleaning fluid and turn the drum slowly with the hand, cleaning the heads. (Never turn the motor by the electric power for the cleaning.)
- Never move the cleaning piece in the vertical direction of the head tip in the cleaning. It tends to damage the head tips.

(2) Cleaning of tape running system

- Wipe the tape bearing surfaces (of the tape guide, drum, capstan, and pinch roller) with cleaning piece saturated with the cleaning fluid.

(3) Cleaning of drive system

- Wipe the drive system (such as belt, idler, and reel table surface) with cleaning piece saturated with the cleaning fluid.

3-2. PERIODIC CHECK

Perform the maintenance checks described separately in accordance with the operational hours of the machine.

3-3. OTHERS

(1) SONY oil

- Be sure to use the SONY oil as the lubrication oil. (If oil other than the SONY oil is used, various troubles due to a different viscosity tends to be caused.)

SONY oil: Part No. 7-661-018-01

- Use the SONY oil in which dust or other foreign material have not mixed for lubricating the bearing. (If foreign material is in the oil, wear or burning of the bearing tends to be caused.)

(2) Grease

Be sure to use the following grease.

SONY grease: Part No. 7-662-001-62 (SGL-501)

(3) Regarding overhaul of equipment

When overhaul of an equipment is attempted, replace parts referring list. For the parts not listed in the list, such as motors and heads, refer the following items.

Reel motor;	about 3,000H
Capstan motor;	about H
Threading motor;	about H
Cassette-up compartment motor;	about H
Audio/CTL head;	about 3,000H
CTL/PB head;	about H

CHECK AND MAINTENANCE

■ : apply oil ○ : cleaning ◆ : replace ◇ : check ⊙ : apply a grease

Item	Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
	Part No. of Replacement Parts												
Tape path cleaning	—		○	○	○	○	○	○	○	○	○	○	Perform whenever repair work is attempted NOTE, 1
Video heads cleaning and replace	A-6709-400-A		○	◆	○	◆	○	◆	○	◆	○	◆	Life of the video heads are affected extensively by operating ambient conditions NOTE, 2
Replacement of pinch roller	A-6750-125-D		○	◆	○	◆	○	◆	○	◆	○	◆	Life of the pinch roller are affected extensively by operating systems NOTE, 3
Replacement of FF/REW idler belt	3-668-785-00		○	○	○	◆	○	○	○	◆	○	○	
Replacement of reel table	A-6739-017-A		■	○	○	◆	○	■	○	◆	○	■	NOTE, 4
Replacement of R brake shoe	X-3668-737-0		—	—	—	◆	—	—	—	◆	—	—	NOTE, 5
Replacement of brake band	X-3668-707-0		—	—	—	◆	—	—	—	◆	—	—	NOTE, 6
Replacement of belt on gear box	3-668-946-00		○	○	○	○	○	○	○	◆	○	○	
Replacement of belt on cassette-up compartment	3-653-387-00		○	○	○	○	○	○	○	◆	○	○	
Cleaning the shaft of the threading roller on the threading ring	—		—	○	—	○	—	○	—	○	—	○	Clean with a cloth dampened with a cleaning fluid NOTE, 7
Apply a grease on the ring rollers	—		—	⊙	—	⊙	—	⊙	—	⊙	—	⊙	Apply a grease on the surface of the ring roller
Check the FWD back tension	—		—	◇	—	◇	—	◇	—	◇	—	◇	NOTE, 8
Check the FWD torque	—		—	◇	—	◇	—	◇	—	◇	—	◇	NOTE, 9
Check the REV torque	—		—	◇	—	◇	—	◇	—	◇	—	◇	NOTE, 10
Check the brake torque	—		—	—	—	◇	—	—	—	◇	—	—	NOTE, 11

*NOTE, 1: Refer to sec. 3-1.

*NOTE, 2: Refer to sec. 3-1.

*NOTE, 3: After this replacement, perform the adjustments as following page 4-6 "pinch roller replacement".

*NOTE, 4: After this replacement, perform the adjustments as following page 4-6 "take-up reel table replacement" and "supply reel table replacement".

*NOTE, 5: After this replacement, perform the adjustments as following page 4-7 "R brake shoe replacement".

*NOTE, 6: After this replacement, perform the adjustments as following page 4-6 "brake band replacement".

*NOTE, 7: Refer to sec. 4-6.

*NOTE, 8: Refer to sec. 6-6.

*NOTE, 9: Refer to sec. 6-3.

*NOTE, 10: Refer to sec. 6-4.

*NOTE, 11: Refer to sec. 6-1.

SECTION 4

REPLACEMENT OF MAJOR PARTS

4-1. REPLACEMENT OF UPPER DRUM ASSEMBLY

- The rotary video heads cannot be replaced individually; the whole upper drum assembly must be replaced when any one of these heads fails.

Tool:

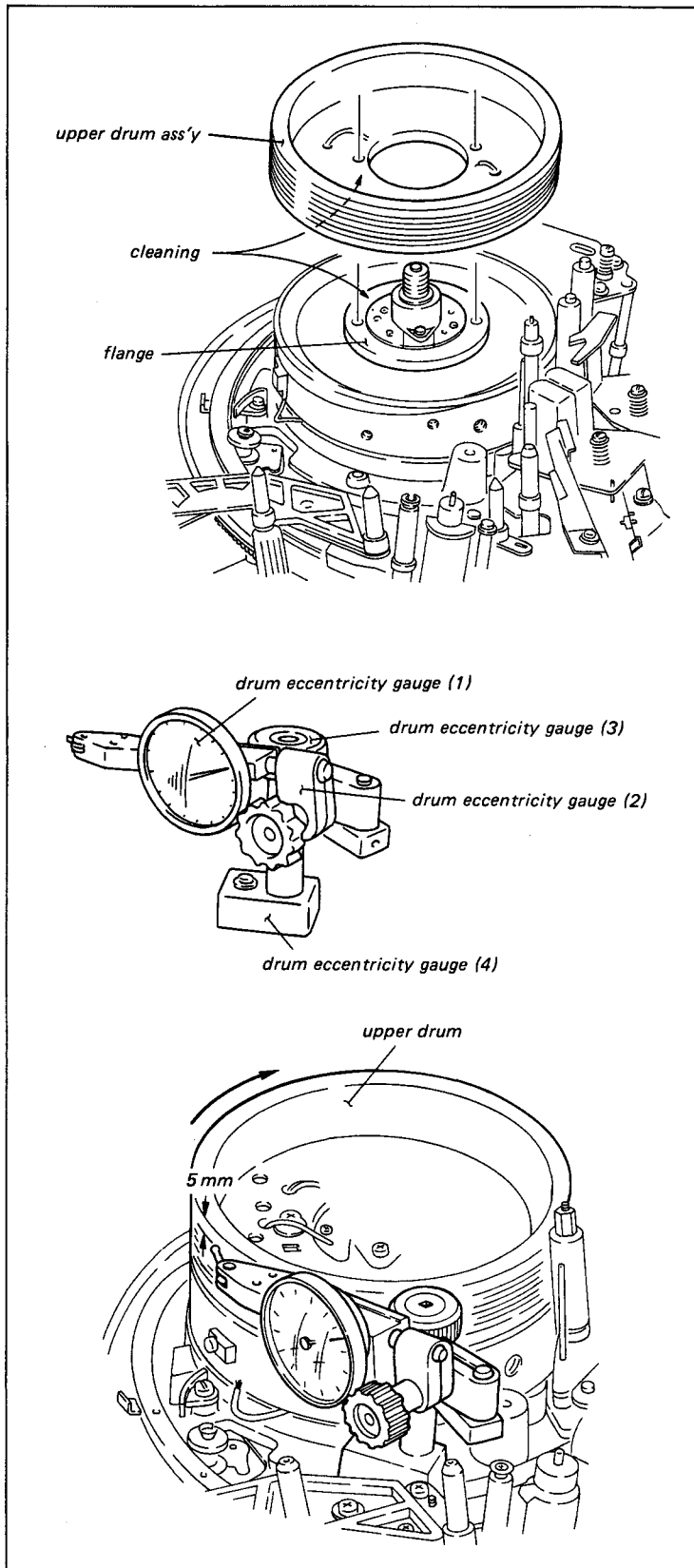
- Drum eccentricity gauge (1)
- Drum eccentricity gauge (2)
- Drum eccentricity gauge (3)
- Drum eccentricity gauge (4)
- Cleaning fluid

Replacement procedure:

- (1) Unsolder the four leads of the video head from the printed circuit board and remove the upper drum assembly from the head drum assembly.
- (2) Clean the matching surfaces of the flange and new upper drum assembly with a cloth moistened with cleaning fluid. (If there is a spacer between drum and flange, it should be remain in place, or be re-installed in the same place with the new upper drum assembly.)
- (3) Place the upper drum assembly so that the head of the white leads is close to the round indentation on the surface of the flange. (The rounded indentation can be seen through the hole in the end of the printed circuit board the white leads are connected to). Thread the two screws snugly but do not tighten.

Adjustment procedure:

- (1) Remove the S guard block (Because the S guard's bottom connector is inserted into the connector on the chassis, it need the power to remove.)
- (2) Assemble the drum eccentricity gauges (1), (2), (3) and (4) as shown in figure. Mount the assembled gauges on the machine so that the tip probe positiones at the point about 5 mm apart from the top edge of the upper drum.
- (3) Turn the upper drum slowly clockwise and confirm the pointer deflection of the gauge is within 5μ during one complete turn of the upper drum. If this specification is satisfied, proceed with step (5). If it is not, perform step (4).
- (4) Tap the inside of the upper drum with a nylon hammer or a screwdriver handle and like so that the gauge deflection remains within 5μ .
- (5) After the adjustment, tighten the two screws that are securing the upper drum, alternately and gradually using a tightening torque: 14 ~ 16 kg.cm.

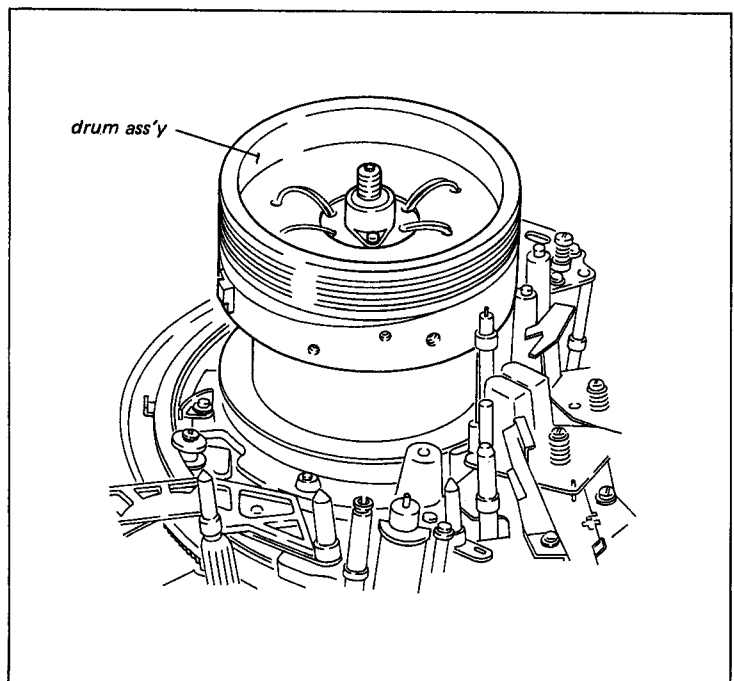


- (6) After the screws are tightened, check again that the eccentricity of the upper drum is within 5μ .
- (7) Solder the four leads from the video heads to the printed circuit board.
- (8) Install the S guard block.
- (9) Perform the various adjustments as shown in page 4-6

4.2. REPLACEMENT OF DRUM ASSEMBLY

Replacement procedure:

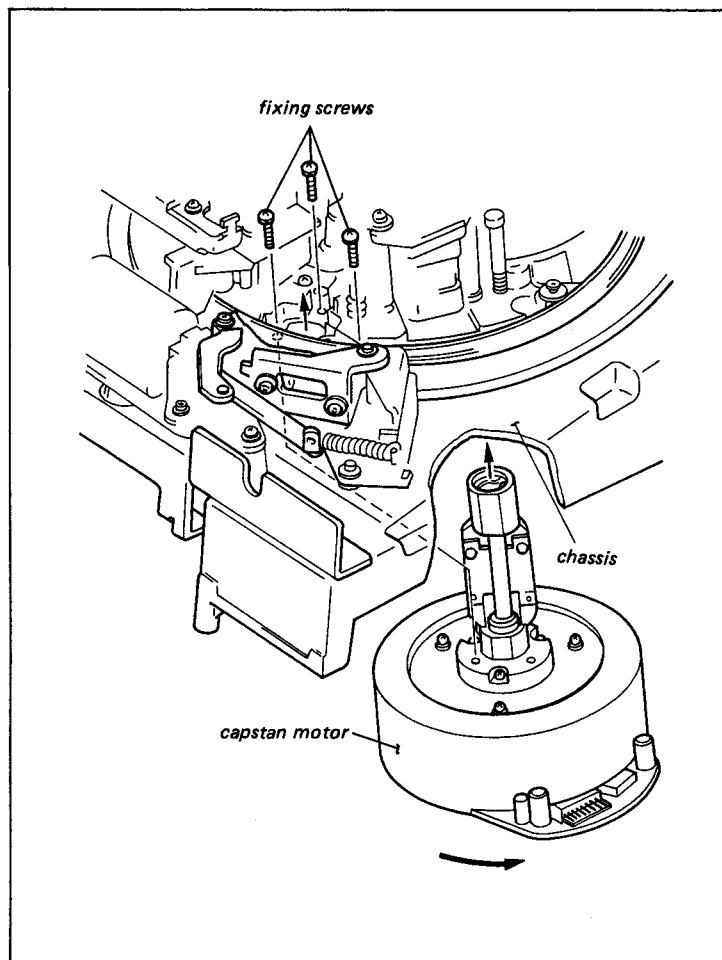
- (1) Disconnect the connectors (CN1 and CN2) of the drum assembly and CN2 on the VP-13 board.
- (2) Remove the three fixing screws on the back of the chassis and remove the defective drum.
- (3) Install the drum on the base while turning the drum assembly in the clockwise direction as seen from top of the set.
- (4) Connect the three connectors.
- (5) Perform the various adjustments as shown in page 4-6 .



4-3. REPLACEMENT OF CAPSTAN MOTOR

Replacement procedure:

- (1) Remove the capstan motor.
- (2) Install the new capstan motor and thread three fixing screws snugly but do not tighten.
- (3) While turning the capstan motor in the counterclockwise direction as seen from top of the set and tighten the fixing screws.

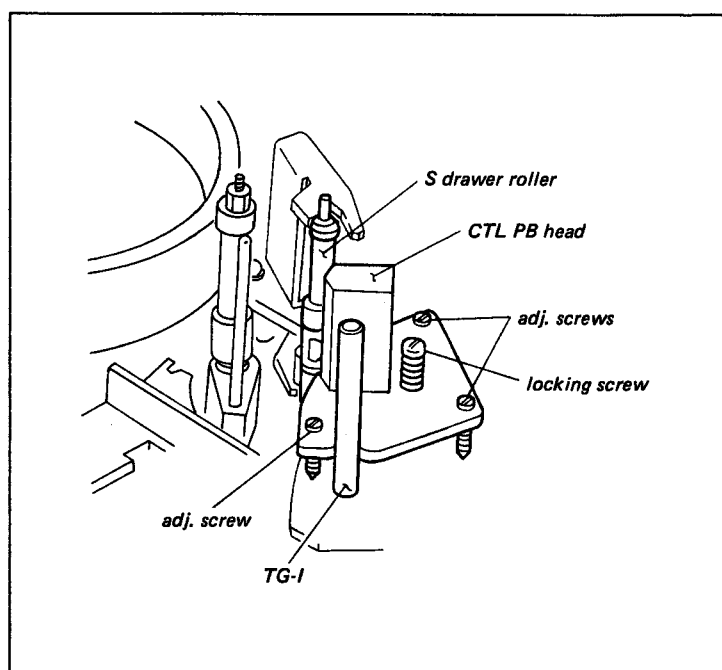


REPLACEMENT

4-4. REPLACEMENT OF CTL PB HEAD

Replacement procedure:

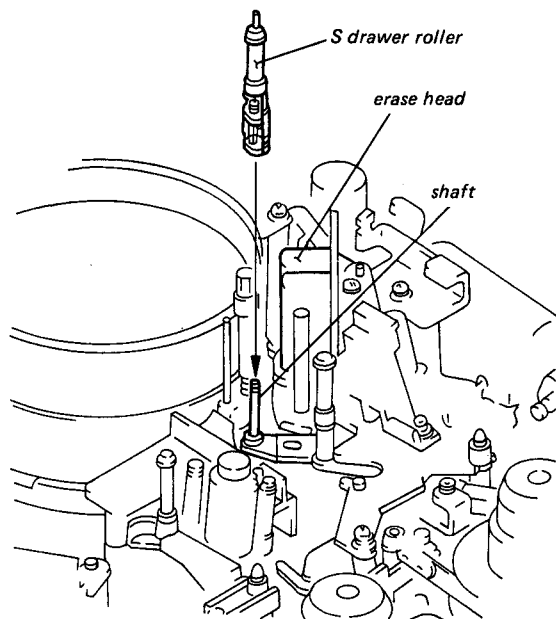
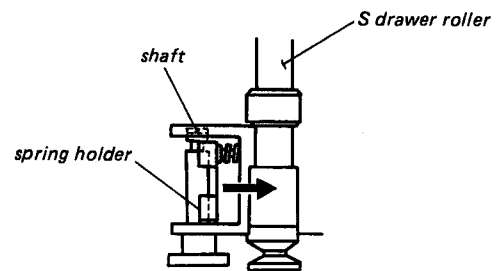
- (1) Remove the locking screw and remove the CTL PB head from the chassis. Do not tighten or loosen three adjusting screws.
- (2) Loosen the two fixing screws under the bracket and replace the CTL PB head.



4-5. REPLACEMENT OF S DRAWER ROLLER

Replacement procedure:

- (1) Put the machine into the EJECT completion mode without cassette tape.
- (2) Turn the pulley of the gear box with finger until the S drawer roller places in front of the CTL PB head.
- (3) Remove the S drawer roller from the shaft while pushing the spring holder in the arrow direction.
- (4) Install the new S drawer roller into the shaft until the S drawer roller locks to the shaft while pushing the spring holder in the arrow direction.



4-6. REPLACEMENT/ADJUSTMENT OF TAPE GUIDES ON THREADING RING

Tool and equipment:

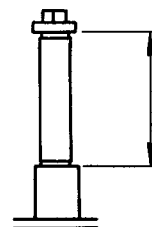
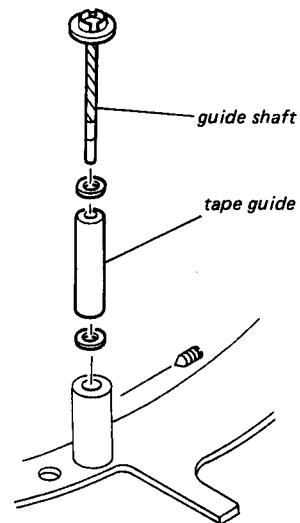
Slide vernier calliper or the equivalent.
Cleaning fluid.

Replacement procedure:

- (1) Remove the tape guide.
- (2) Clean the surface of the shaft with a cloth dampened with a cleaning fluid.
- (3) Assemble the parts.
- (4) The sub-ring upper tape guide and lower tape guide are necessary to perform the guide width adjustment.

Adjustment procedure:

- (1) Adjust the tape guide width to meet the required specification.



Spec.:
19.4 mm ~ 19.5 mm

47. ADJUSTMENT ITEM TABLE AFTER MAIN PARTS REPLACEMENT

Replacement Parts	Adjustment Items
• Threading Ring	Threading Ring Rotation Adjustment (5-3-1) → Pinch Roller Self-Alignment Adjustment (5-3-3) → Pinch Roller Pre-set Adjustment (5-4-2) → T Correction Guide Slantness Adjustment (7-2) → FWD Mode Tape Path Adjustment (1) (7-3) → REV Mode Tape Path Adjustment (7-5) → Height/Azimuth/Zenith Adjustment Bear Box Position Adjustment (5-3-2) → Pinch Roller Self-Alignment Adjustment (5-3-3) → Pinch Roller Pre-set Adjustment (5-4-2) → T Correction Guide Slantness Adjustment (7-2) → FWD Mode Tape Path Adjustment (2) (7-4) → Video Tracking Adjustment (7-7-1) → CTL. PB Head (7-7-2) FR Detector Block (5-3-4) → Pinch Lever Pre-set Adjustment (5-4-1) → FF and REW Modes Tape Path Adjustment (7-1) → Tape Path Adjustment Around Pinch (7-6, (7-6-1, 7-6-2))
• Pinch Roller	Pinch Roller Self-Alignment Adjustment (5-3-3) → Pinch Roller Pre-set Adjustment (5-4-2) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6, (7-6-1, 7-6-2)) → Video Tracking Adjustment (check). (7-7-1)
• Take-up Reel Table	Reel Table Height and Vertical Play Adjustment (5-1-2) → T Brake Torque Adjustment (6-1-2) → REW Brake Torque Adjustment (6-1-3) → FF and REW Torque Adjustment (6-2) → FWD Torque Adjustment (6-3) → FF and REW Tape Path Adjustment. (7-1)
• Supply Reel Table	Reel Table Height and Vertical Play Adjustment (5-1-2) → S Brake Torque Adjustment (6-1-1) → FF and REW Torque Adjustment (6-2) → REV Torque Adjustment (6-4) → FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment (6-6) → Video Tracking Adjustment (check). (7-7-1)
• Brake Band	FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment. (6-6)
• Capstan Motor	Pinch Lever Right Angle Adjustment (5-10) → Pinch Roller Self-Alignment Adjustment (5-3-3) → Capstan STILL x1/15 Speed Adjustment (9-6) → Capstan FWD and REV Detector Adjustment (9-3) → Free Speed Adjustment (9-4) → Capstan STOP Servo Adjustment (9-4) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6, (7-6-1, 7-6-2)) → Video Tracking Adjustment (check). (7-7-1)
• Threading Motor	Gear Box Position Adjustment. (5-3-2)
• Reel Motor	FWD Torque Adjustment (6-3) → REV Torque Adjustment (6-4) → Still Speed Adjustment. (9-11-1)
• CTL. PB Head	CTL. PB Head Height/Azimuth/Zenith Adjustment (7-7-2) → Tracking Adjustment (check). (7-7-1)
• Audio/CTL Head	Audio Head Height Adjustment (7-7-3) → Audio Head Azimuth Adjustment (7-7-5) → Video Tracking Adjustment (7-7-1) → Audio Head Height Adjustment (7-7-3) → Audio Head Azimuth Adjustment (7-7-5) → Audio Head Phase Adjustment (7-7-6) → Audio/CTL Head Position Adjustment (7-7-7) → Audio System Alignment. (10-1 ~ 10-2)

Replacement Parts	Adjustment Items
• Drum Assembly	→ Tracking Adjustment (7-7, (7-7-1 ~ 7-7-7)) → FF and REW Tape Path Adjustment (7-1) → FWD Mode Tape Path Adjustment (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Head Dihedral Adjustment (7-8) → Drum AFC Bias Adjustment (9-7) → Drum AFC Transient Adjustment (9-8) → Drum Lock (9-9) → Phase Adjustment (9-10) → Switching Position Adjustment. (9-10) → PB RF Amplifier Adjustment. (11-1, (11-1-1 ~ 11-1-5))
• Upper Drum Assembly	→ Upper Drum and Eccentricity Adjustment (4-1) → Tracking Adjustment (7-7, (7-7-1 ~ 7-7-7)) → FF and REW Tape Path Adjustment (7-1) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Head Dihedral Adjustment (7-8) → PB RF Amplifier Adjustment. (11-1, (11-1-1 ~ 11-1-5))

REPLACEMENT

SECTION 5

LINK AND DRIVE SYSTEM ALIGNMENT

5-1. REEL TABLE SYSTEM ADJUSTMENT

5-1-1. Cassette Holder Position Adjustment

Tool and equipment:

Reel table height check base jig.
Thickness gauge.

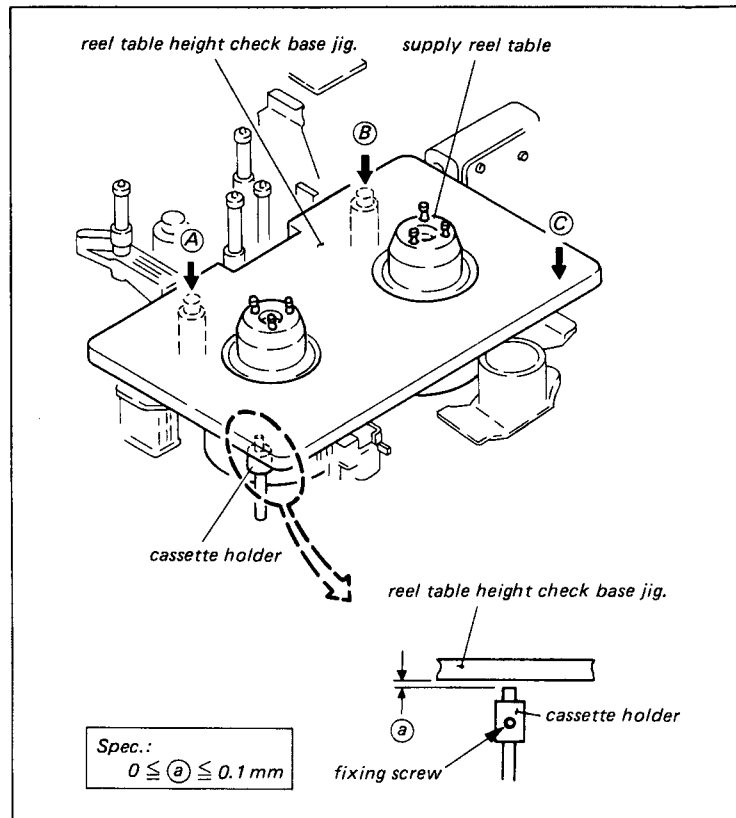
Mode: EJECT completion

Check procedure:

Check that the clearance between the base jig and the cassette holder meets the required specification while pushing lightly the reel table height check base jig marked (A), (B) and (C) toward the chassis.

Adjustment procedure:

Adjust the position of the cassette holder so that meets the required specification.



LINK AND DRIVE

5-1-2. Reel Table Height and Vertical Play Adjustment

- Since the reel table height from the chassis functions as the reference height in the entire tape thread and run system, it is requested that the reel table height adjustment should be attempted carefully, and deliberately.

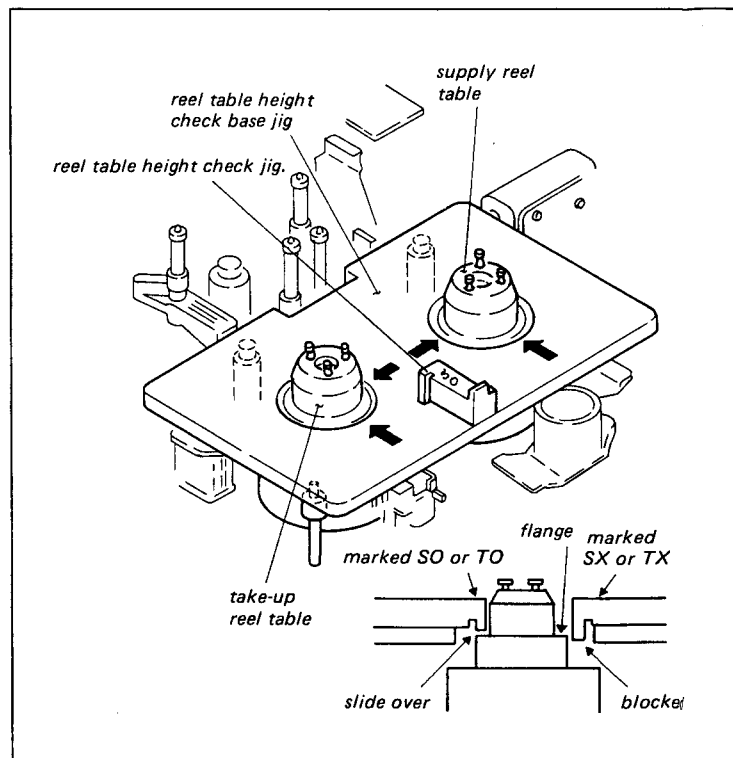
Mode: EJECT completion

Tool and equipment:

Reel table height check base jig.
Reel table height check jig.
Slide vernier callipers or the equivalent.

Check procedure:

- The probes of the reel table height check jig marked "SO" and "TO" can slide over the reel table, leaving a space between the jig and the reel table, while the probes marked "SX" and "TX" are blocked, and cannot slide over reel table.
 - Use the "SO" and "SX" probes for the supply reel table.
 - Use the "TO" and "TX" probes for the take-up reel table.



- (2) Fasten a reel table securing screw, and push up and down the reel table for inspection. Check that the vertical play meets the required specification.

Adjustment procedure:

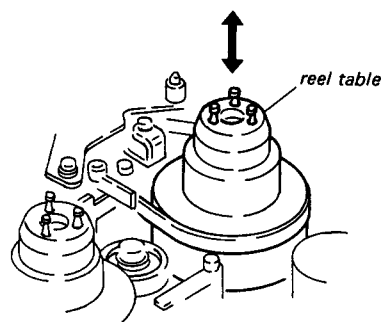
- (1) Adjust height by the washer from under the reel table.
- (2) Adjust vertical play by the washer on top of the reel table.

< NOTE >

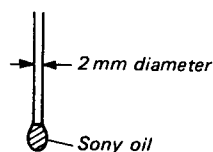
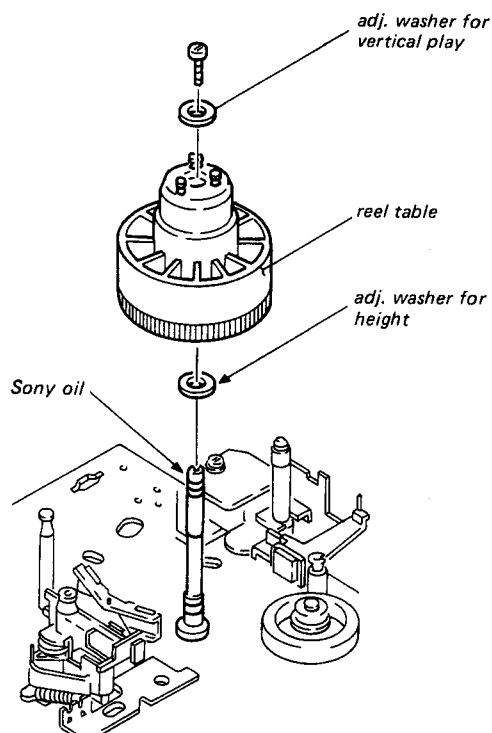
Apply a drop of SONY oil on the reel spindle as shown in figure, whenever the reel table is removed and is adjusted its height with washer.

Amount of oil should be one drop that is scooped by tip of 2 mm diameter twig such as pencil lead.

- 6 mm diameter washer
 - 0.5 mm thick, 3-701-444-21
 - 0.25 mm thick, 3-701-444-11
 - 0.13 mm thick, 3-701-444-01



Spec.:
vertical play
0.17 mm ~ 0.38 mm



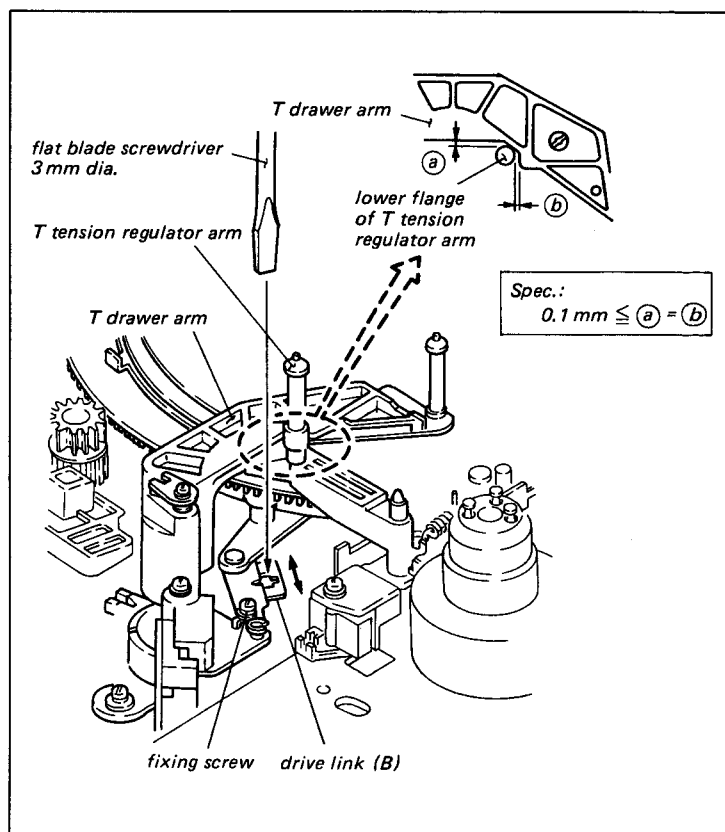
5-2. T DRAWER ARM ADJUSTMENT

5-2-1. T Drawer Arm EJECT Position Adjustment

Mode: Setting up FR-STOP mode without cassette tape, and press the EJECT button for setting up EJECT completion state.

Check procedure: Check that the relationship between the lower flange of T tension regulator arm and the T drawer arm meets the required specification.

Adjustment procedure: Adjust the position of drive link (B) ass'y by the flat blade screwdriver, 3 mm dia. so that meets the required specification.

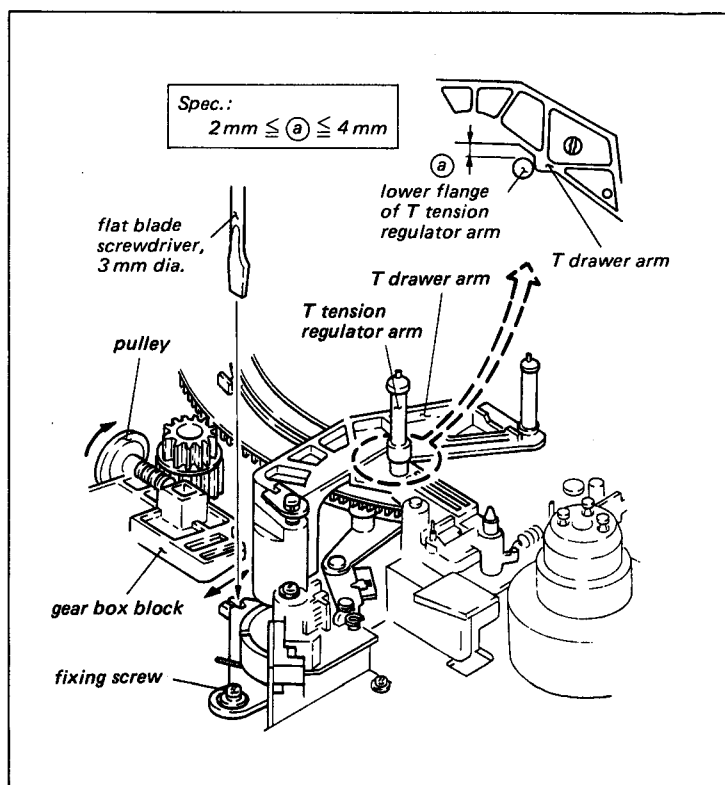


5-2-2. Unthread-end Switch Position Adjustment

Tool and equipment: Black colored vinyl tape (1 cm x 1.5 cm)

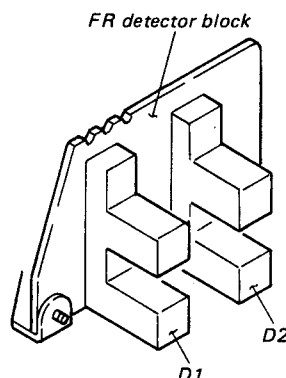
Preparation: (1) Turn the POWER off in the FR-STOP mode.
(2) Remove the FR detector block, and cover the D2 photo-interrupter (FR-UNTHREAD END Detector) by the black colored vinyl tape. (Put the FR detector in the FR-STOP mode constantly.)

Check procedure: (1) Turn POWER on and rotate the pulley of gear box block in the clockwise direction with finger.
(2) While the relationship of the T drawer arm and the T tension regulator arm is shown in the figure, check that a energized noise of the take-up brake solenoid is heard in this moment.



Adjustment procedure:

- (1) Adjust the position of the photo interrupter holder by the flat blade screwdriver, 3 mm dia. so that meets the required specification.
- (2) Turn POWER off, and mount the FR detector block after peel off the black colored vinyl tape.
- (3) Adjust the FR detector block mounted position. (sec. 5-3-4.)
- (4) Hook the spring on the FR detector block from the pinch lever block.



5.3. THREADING SYSTEM ADJUSTMENT

5.3-1. Threading Ring Rotation Adjustment

- This adjustment is required only when the threading ring is replaced or removed.
- If the threading ring is left unadjusted to have narrower clearance, the ring rotation becomes heavy, or if left to have wider clearance, tape run during threading, FWD, and REV modes will be unstable.

Mode: Check mode; EJECT completion/threading/unthreading
Adjustment mode; EJECT completion

Check procedure:

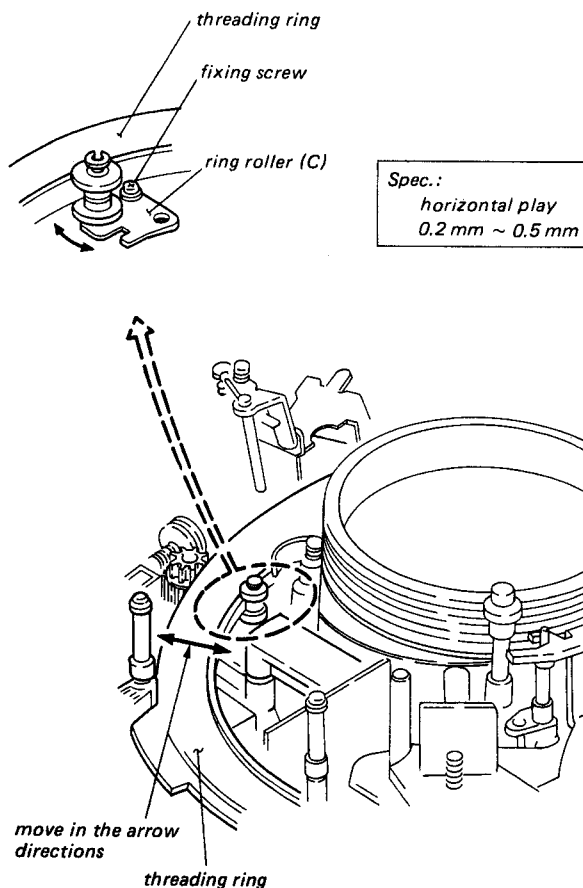
- (1) Check that the horizontal play meets the required specification when the threading ring is pushed in the direction of the arrow in the EJECT completion mode.
- (2) Check that the rotation of the threading ring into the threading and unthreading modes are smooth.

Adjustment procedure:

- (1) Put the machine into the EJECT completion mode.
- (2) Adjust the position of the ring roller (C) so that meets the required specification.

Adjusting procedure;

- Insert a 0.3 mm thick paper between the threading ring and the ring roller (C).
- Paper of this service manual is 0.1 mm thick so that the three fold becomes 0.3 mm thick.



5-3-2. Gear Box Position Adjustment

- It is required that the sec. 5-3-1 threading ring rotation adj. is checked to be correct or properly adjusted before initiating this adjustment.

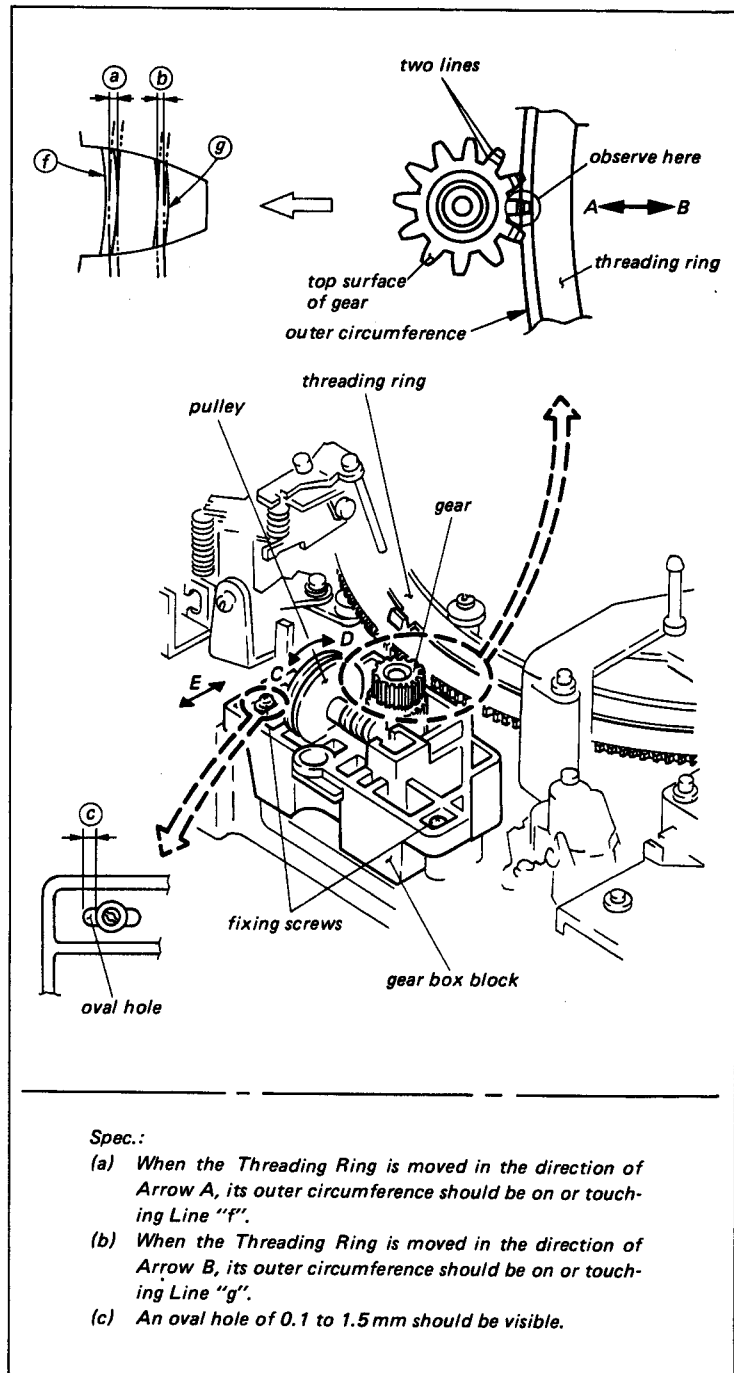
Mode: After completion of EJECT, turn the pulley 1/2 to 1 revolution in the direction of Arrow C in order to push out the Threading.

Check procedure:

- In order to make them easier to see during the Adjustment, mark the two lines on the top surface of the gear with a black felt tip pin.
- Turn the pulley so that one of the lines is roughly parallel to the outer circumference of the Threading Ring.
- Check to be certain that the relationship between the outer circumference of the Threading Ring and the Gear is within the Specifications.

Adjustment procedure:

- With the unit's EJECT completed and the pulley turned 1/2 to 1 revolution (as stated above under MODE), turn the pulley back and forth, as indicated by Arrows C and D, so that the Threading Ring and the Gear engage smoothly.
- Adjust the position of the Gear Box by moving it in the direction indicated by Arrow E until it is within the Specifications.
- Check the sec. 5-3-1 threading ring rotation adj.



5-3-3. Pinch Roller Self-Alignment Adjustment

- If the pinch roller self-alignment is poor, pinch roller's position and inclination against the capstan are erroneous so that the tape will get sear, in the instance of pinch roller's pressing against the capstan.
- Perform the pinch roller pre-set adjustment after this adjustment.

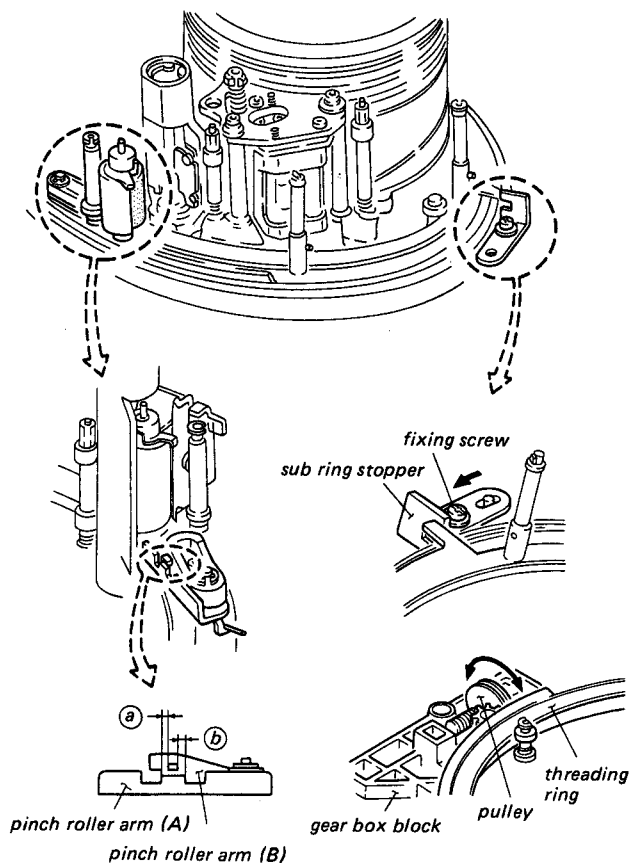
Mode: PLAY

Check procedure:

- (1) Put the machine into PLAY mode without cassette.
- (2) Check that the relationship between the pinch roller arm (A) and (B) meets the required specification.

Adjustment procedure:

- (1) Put the machine into PLAY mode without cassette.
- (2) Loosen the fixing screw of sub ring stopper.
- (3) Turn the pulley of gear box block in the arrow direction with finger.
- (4) Push the sub ring stopper in the direction of the arrow and tighten the fixing screw.
- (5) Put the machine once into the FR-STOP mode, and confirm as check procedure.



Spec.:

Clearance (a) and (b) should exist.

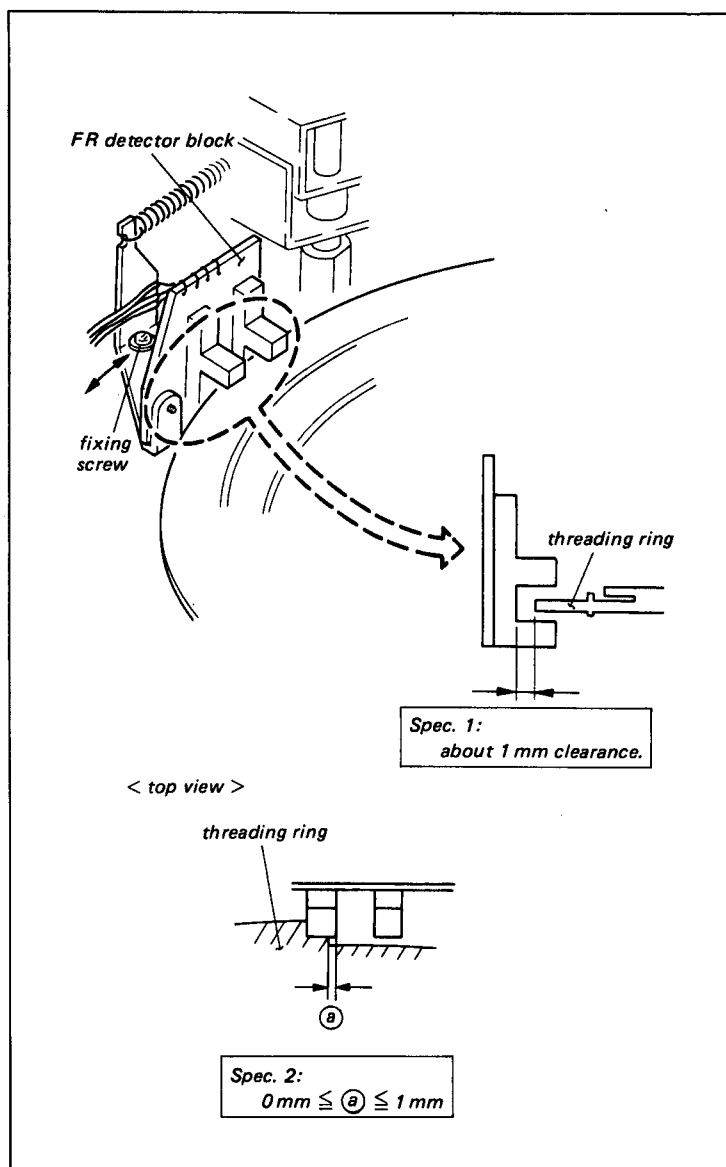
5-3.4. FR Detector Block Mounting Position Adjustment

- It is required that the sec. 5-3-1 threading ring rotation adj. is checked to be correct or properly adjusted before initiating this adjustment.

Mode: Adjustment mode; THREADING completion

Adjustment procedure:

- (1) Put the machine into THREADING completion mode and turn POWER off.
- (2) Press the FR detector block against the threading ring, and then return about 1 mm. (Don't return more than 1.5 mm) (Spec. 1)
- (3) Adjust the position of the FR detector block in the arrow direction so that meets the required specification 2.
- (4) Check that the clearance meets the required specification 1.



5-4. PINCH LEVER BLOCK ADJUSTMENT

5-4-1. Pinch Lever Pre-set Adjustment

- It is required that the threading ring rotation adj. and the pinch roller self-alignment adj. are checked to be correct or properly adjusted before initiating this adjustment.

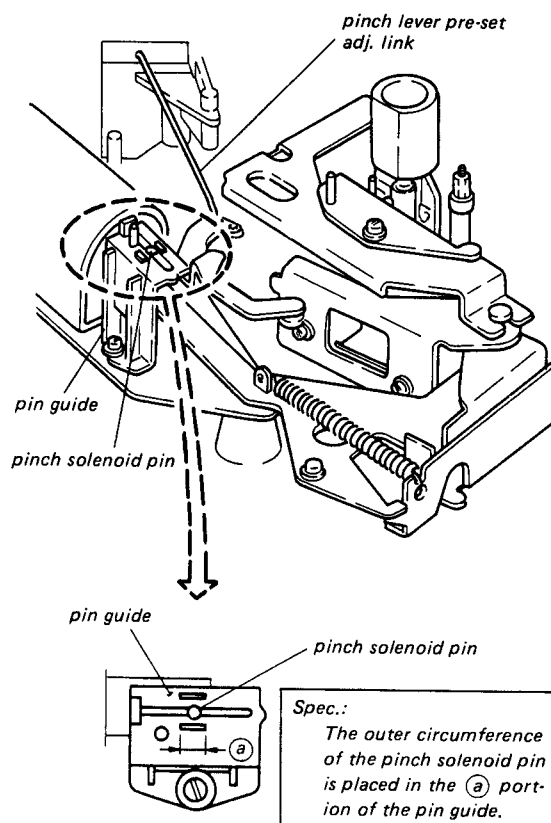
Mode: Turn POWER off in PLAY mode.

Check procedure:

- (1) Turn POWER off in PLAY mode. Check that the position of the pinch solenoid pin meets the required specification.
- (2) Turn POWER on, and press the PLAY button after once unthreading. Check as procedure (1).

Adjustment procedure:

- (1) Adjust the position of pinch solenoid within the specified value, refer to sec. 5-7-4.
- (2) If not in step (1), perform the pinch roller self-alignment adjustment within the specified value, refer to sec. 5-3-3.
- (3) If not in step (1) and (2), select the pinch lever pre-set adjustment link to the proper hole of the preset lever ass'y to meets the specification.



5-4-2. Pinch Roller Pre-set Adjustment

- It is required that the threading ring rotation adj. and the pinch roller self-alignment adj. are checked to be correct or properly adjusted before proceeding this adjustment.

Mode: Turn POWER off in PLAY mode.

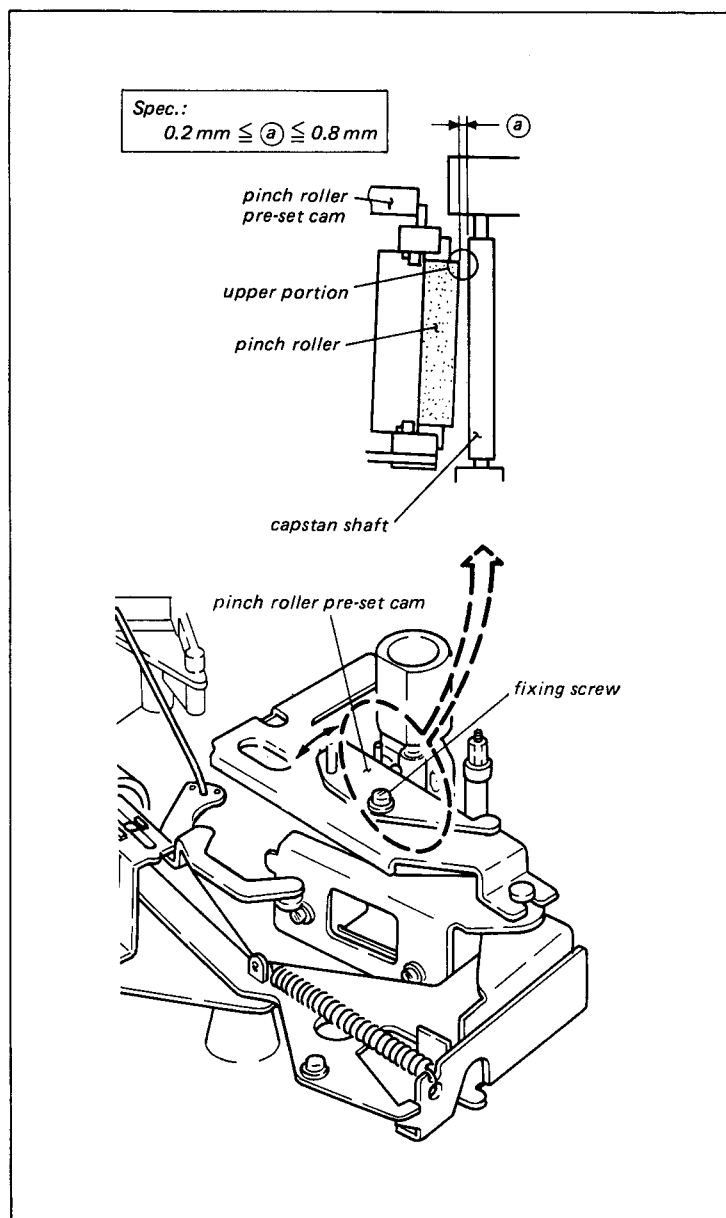
Tool and equipment:
Thickness gauge

Check procedure:

- Turn POWER off in PLAY mode. Check that the clearance between the upper portion of pinch roller and the capstan shaft meets the required specification.
- Turn POWER on, and press the PLAY button after once unthreading. Check as procedure (1).

Adjustment procedure:

- Turn POWER off. Move the position of the pre-set cam in the direction of the arrow so that meets the required specification.
- Confirm as check procedure in this step.



5-4-3. Pinch Solenoid Block Position Adjustment

Mode: PLAY

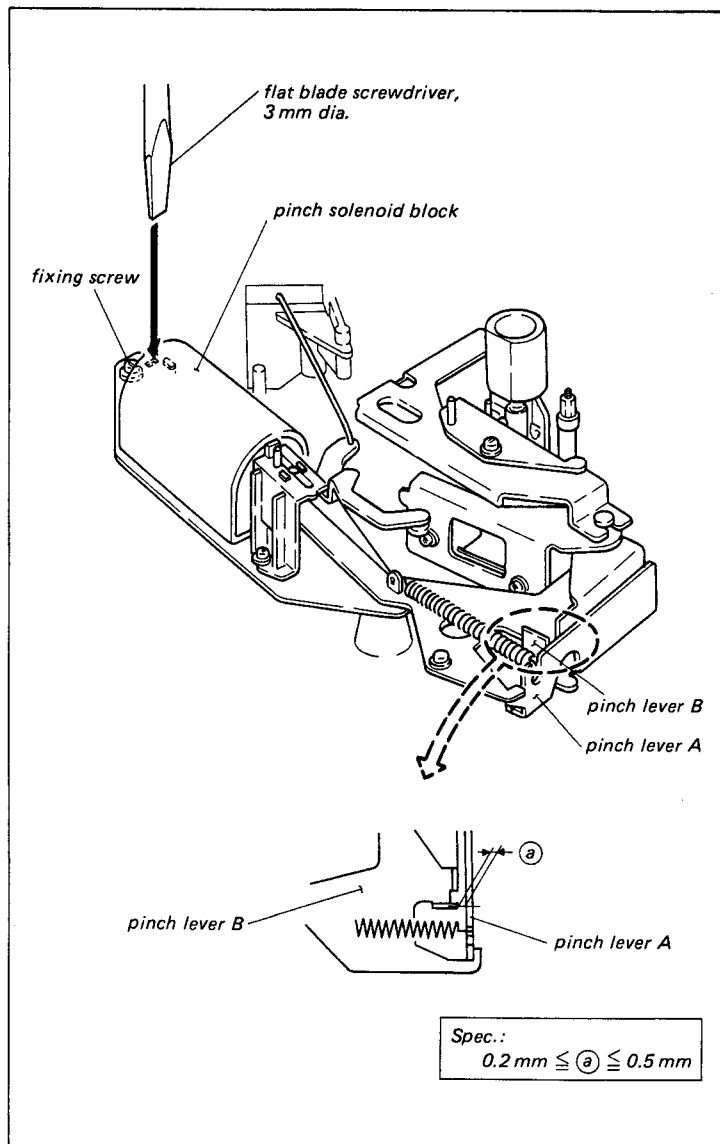
Tool and equipment:
Thickness gauge

Check procedure:

- (1) Thread a tape and put the machine into PLAY mode.
- (2) Check that the clearance between the pinch lever A and B meets the required specification.
- (3) Repeat the unthreading/threading two or three times. Check as procedure (2).

Adjustment procedure:

- (1) Adjust the position of the pinch solenoid block by the flat blade screwdriver, 3 mm dia. in PLAY mode so that meets required specification.
- (2) Confirm as check procedure (2) and (3).



5-5. T TAPE SENSOR POSITION ADJUSTMENT

- There are two adjustments of the height and the clearance between a tape and LED in this section.

Mode: Thread a tape and put the machine into FR-STOP and PAUSE modes.

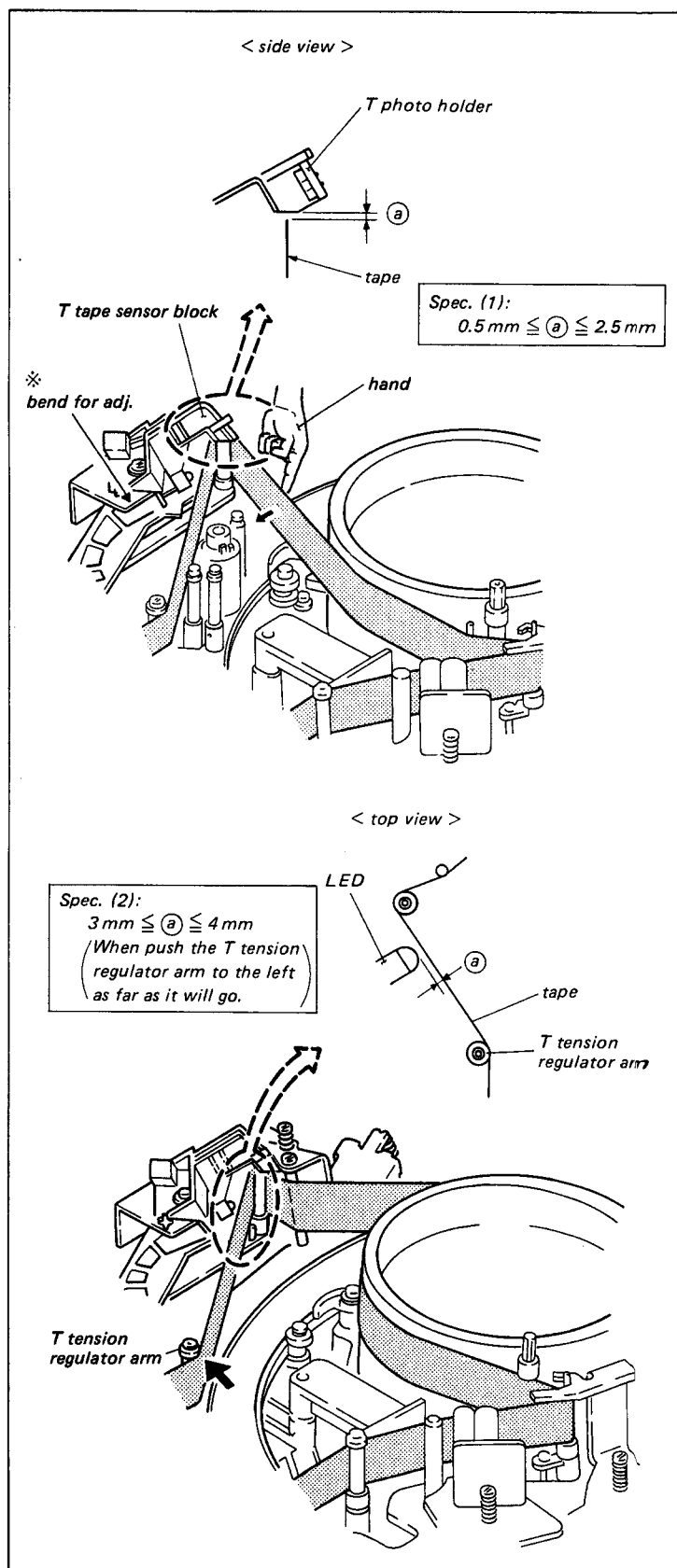
Tool and equipment:
Thickness gauge

Check procedure:

- Thread a tape and put the machine into FR-STOP mode. Push the tape against the cassette tape side with finger as shown in figure. Check that the clearance between the top edge of a tape and the bottom side of T photo holder block (black colored plastic) meets the required specification (Spec. (1)).
- Put the machine into PAUSE mode. Push the T tension regulator arm to the left as far as it will go. On the T tape sensor block, check that the clearance between the video tape and the tip of LED meets the required specification (Spec. (2)).

Adjustment procedure:

- Bend the * marked position in figure with pliers so that meets the required specification. Confirm as check procedure (2).
- Adjust the position of the T tape sensor block by the flat blade screwdriver, 3 mm dia. so that meets the required specification (2).



5-6. TENSION ARM SYSTEM ADJUSTMENT

5-6-1. S Drawer Roller Ass'y Limiter Adjustment

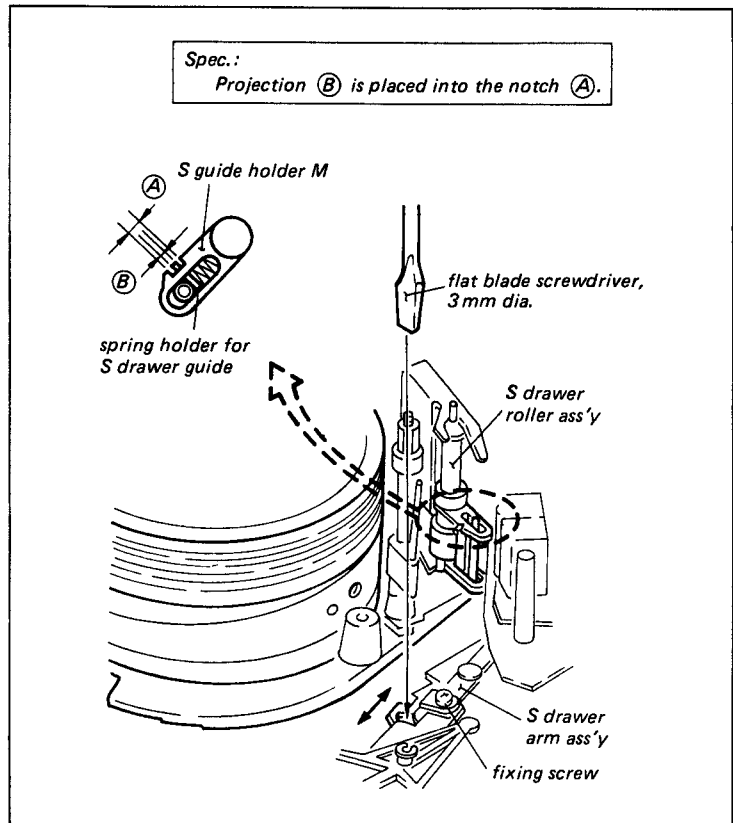
Mode: FR-STOP

Check procedure:

Check that the spring holder for S drawer guide, marked (B), of the S drawer arm ass'y is placed into notch of the S guide holder M, marked (A).

Adjustment procedure:

- (1) Adjust the position of the S drawer arm ass'y by the flat blade screwdriver, 3 mm dia. so that meets the required specification.



5-6-2. T Tension Regulator Operating Position Adjustment

Mode: FR-STOP

Tool and equipment:

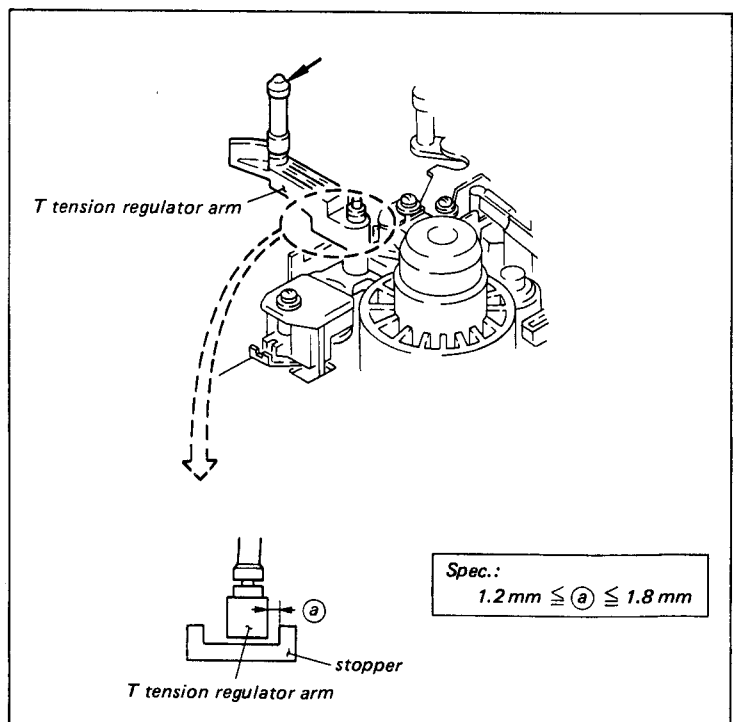
Thickness gauge

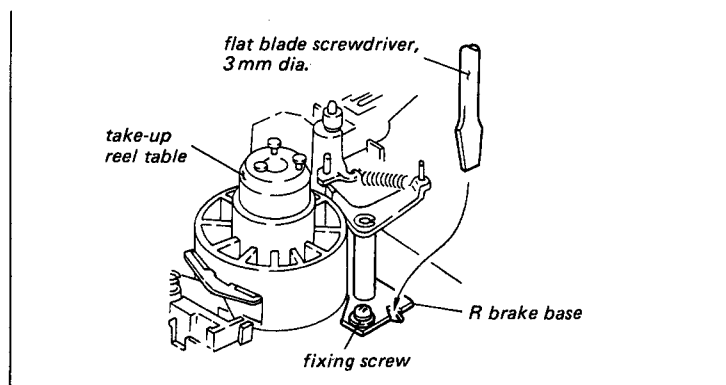
Check procedure:

- (1) Push the T tension regulator arm lightly to the left with finger as far as it will go (in the arrow direction), and remove the finger gently.
- (2) Check that the clearance between T tension regulator arm and stopper meets the required specification.

Adjustment procedure:

- (1) Adjust the position of R brake lever by the flat blade screwdriver, 3 mm dia. so that meets the required specification.





5-6-3. S Tension Regulator Operating Position Adjustment

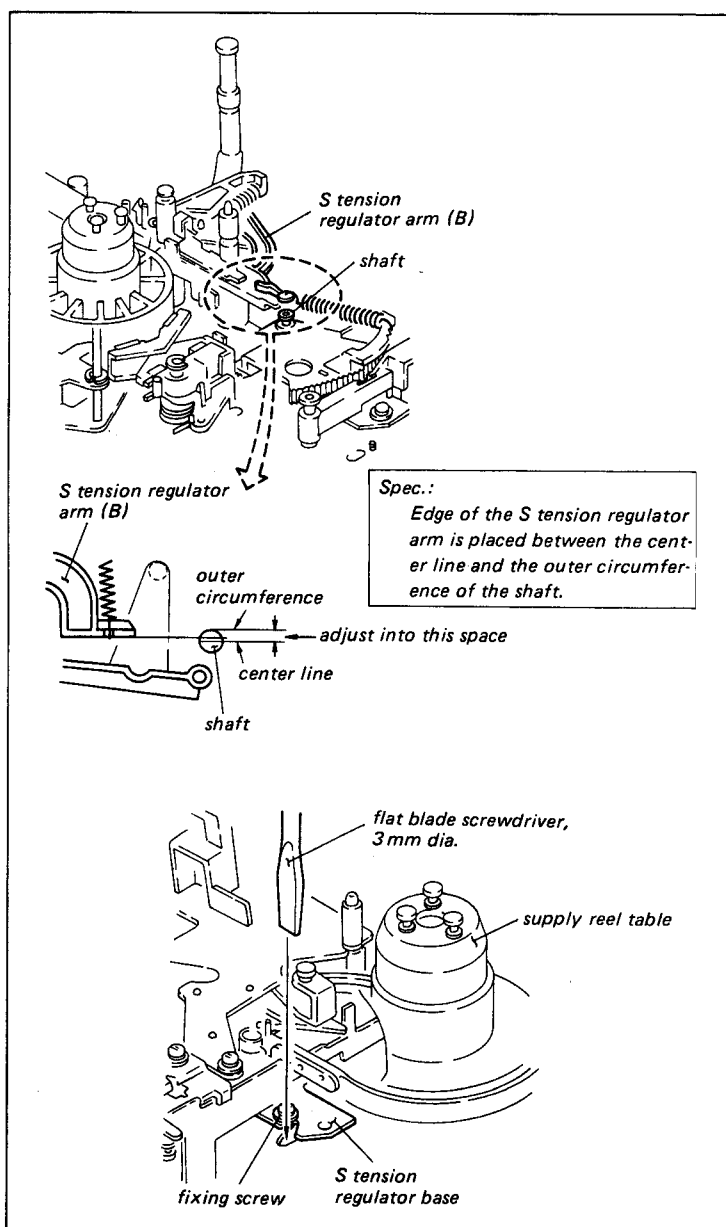
Mode: FF

Check procedure:

- (1) Put the machine into FF mode without cassette tape.
- (2) Check that the edge of S tension regulator arm (B) meets the required specification.

Adjustment procedure:

- (1) Adjust the position of S tension regulator base so that meets the required specification.



5-6-4. Tension Detector Position Adjustment

Mode: FWD/SEARCH REV

Tool and equipment:
DC voltmeter

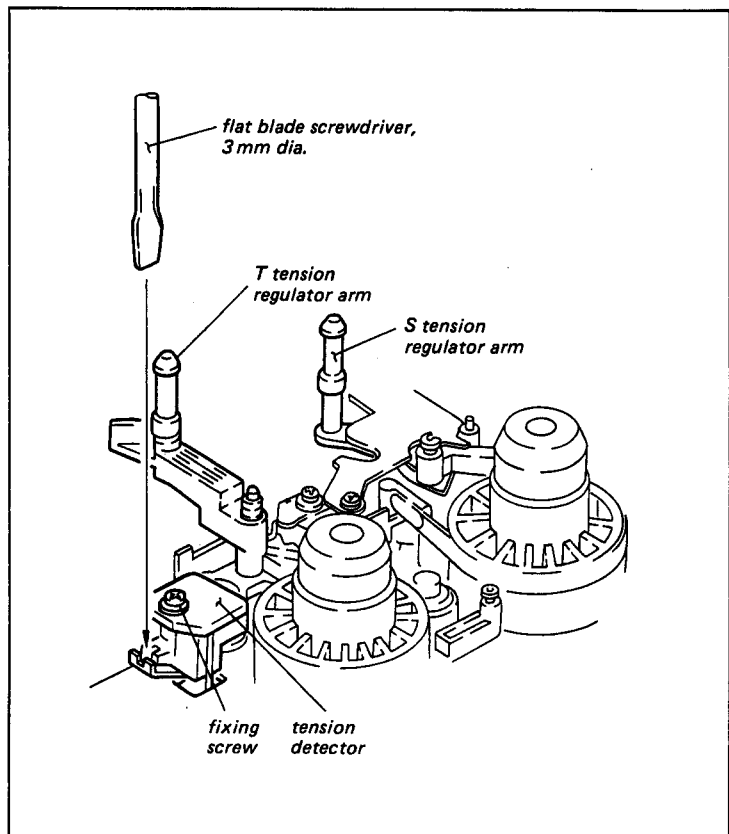
Preparation: Connect dc voltmeter to TP1/SY-75A board.

Check procedure:

- (1) Put the machine into FWD mode without cassette tape.
- (2) Push the T tension regulator arm to the right with finger as far as it will go. Check that the dc voltage is more than 8 V.
- (3) Push the T tension regulator arm to the left with finger as far as it will go. Check that the dc voltage is less than 2.5 V.
- (4) Put the machine into SEARCH REV mode.
- (5) Push the S tension regulator arm to the right with finger as far as it will go. Check that the dc voltage is less than 2.5 V.
- (6) Push the S tension regulator arm to the left with finger as far as it will go. Check that the dc voltage is more than 8 V.

Adjustment procedure:

- (1) Adjust the position of tension detector so that meets the required specification.



5-7. SOLENOID SYSTEM ADJUSTMENT

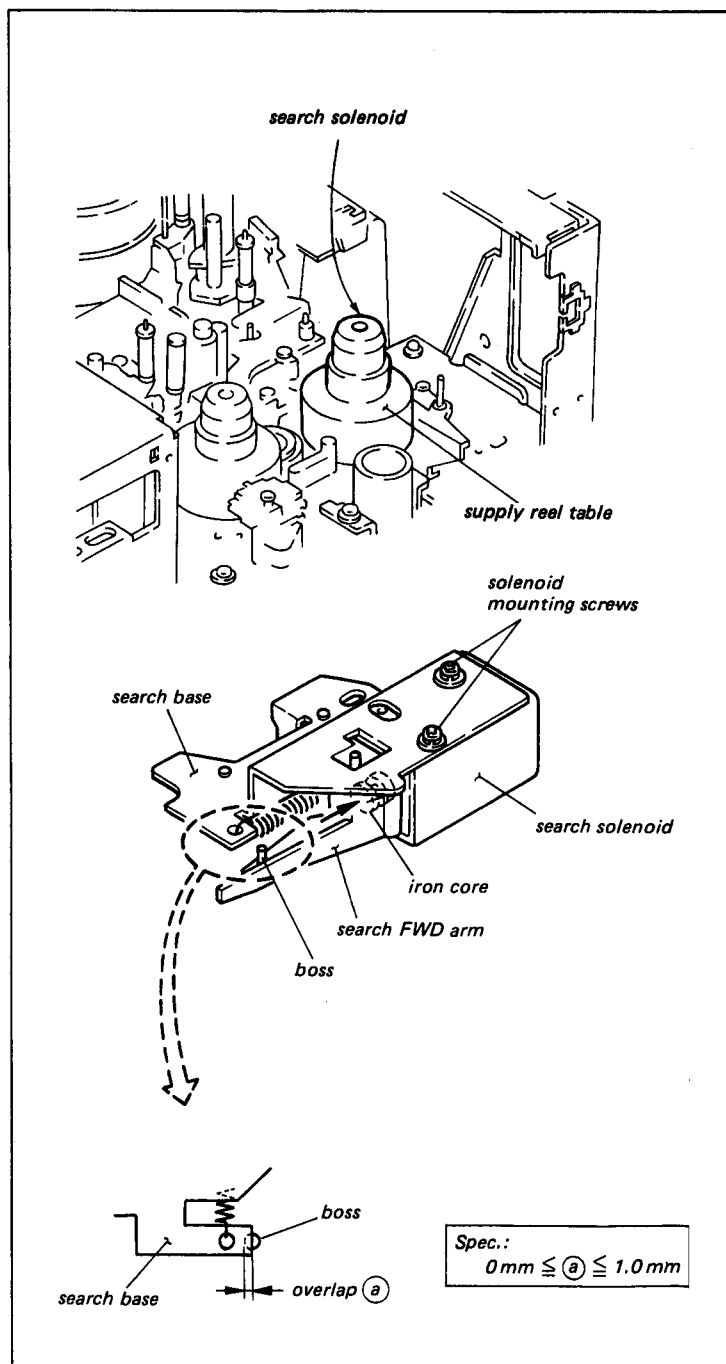
5-7-1. Search Solenoid Mounting Position Adjustment

- This adjustment is usually not required. But proceed with the following step only when the search solenoid is replaced or removed.

Mode: Remove the search solenoid block from the chassis.

Adjustment procedure:

Move the iron core into the fully energized position (indicated by the arrow as far as it will go). Adjust the mounting position of the search solenoid so that the overlap of the search FWD arm boss and the search base meet the required specification.



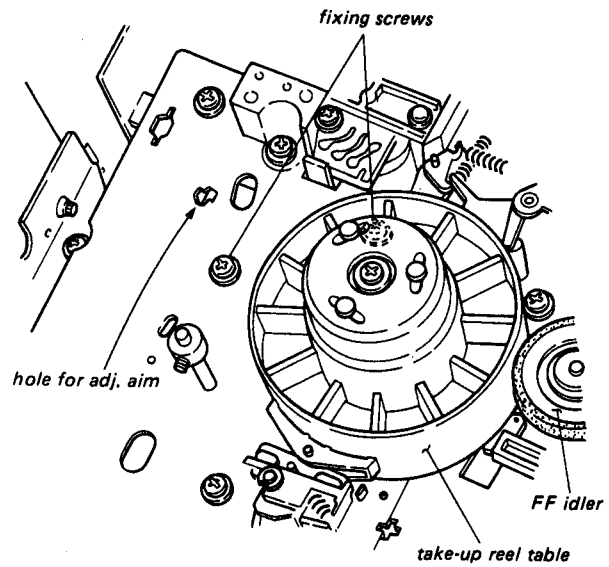
5-7-2. T Idler Solenoid Position Adjustment

- This adjustment is performed when T idler solenoid is replaced or removed and F.FWD torque does not meet the specification.

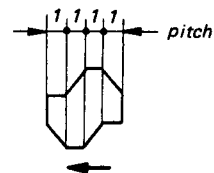
Mode: F.FWD mode without cassette tape

Adjustment procedure:

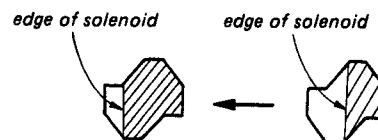
- (1) Put the machine into F.FWD mode without cassette tape.
- (2) Loosen the T idler solenoid fixing screws about 1/2 turn.
- (3) Adjust the position of the T idler solenoid so that 0.01 ~ 0.1 mm clearance exists between the take-up reel table and the FF idler.
- (4) Note the hole to be provided for adjusting aim after proceeding the procedure (3).
Confirm that where the edge of this solenoid is placed in this hole.
- (5) Move the solenoid in the arrow direction only one pitch from the position of procedure (4), and tighten the fixing screws.



< hole for adj. aim >



< for example >



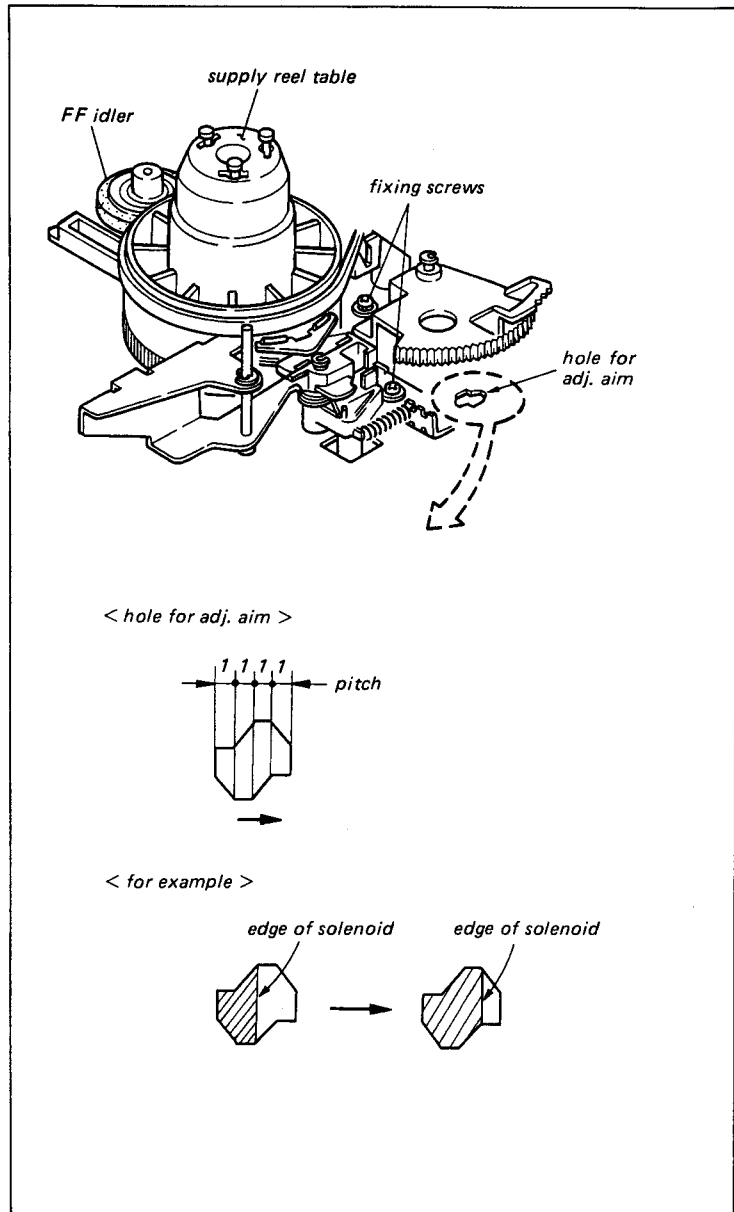
5-7-3. S Idler Solenoid Position Adjustment

- This adjustment is required only when the supply idler solenoid is replaced or removed and the REW torque does not meet the specification.

Mode: REW mode without cassette tape

Adjustment procedure:

- (1) Put the machine into REW mode without cassette tape.
- (2) Loosen the supply idler solenoid fixing screws about 1/2 turn.
- (3) Adjust the position of the S idler solenoid so that 0.01 ~ 0.1 mm clearance exists between the supply reel table and the FF idler.
- (4) Note the hole to be provided for adjusting aim after proceeding the procedure (3).
Confirm that where the edge of this solenoid is placed in this hole.
- (5) Move the solenoid in the arrow direction only one pitch from the position of procedure (4). Tighten fixing screws.



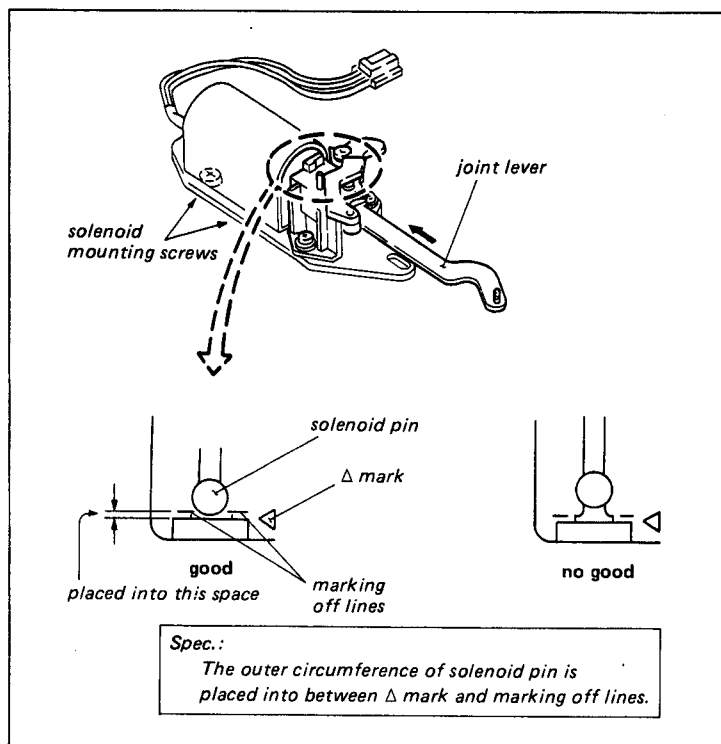
5-7-4. Pinch Solenoid Mounting Position Adjustment

- This adjustment is usually not required. Proceed with the following step only when the pinch solenoid is replaced or removed.

Mode: Remove the pinch solenoid block from the chassis.

Adjustment procedure:

Move the joint lever into the fully energized position (indicated by the arrow as far as it will go). Adjust the solenoid mounting position so that the outer circumference of solenoid pin meets the required specification.



5-7-5. T Brake Solenoid Position Adjustment

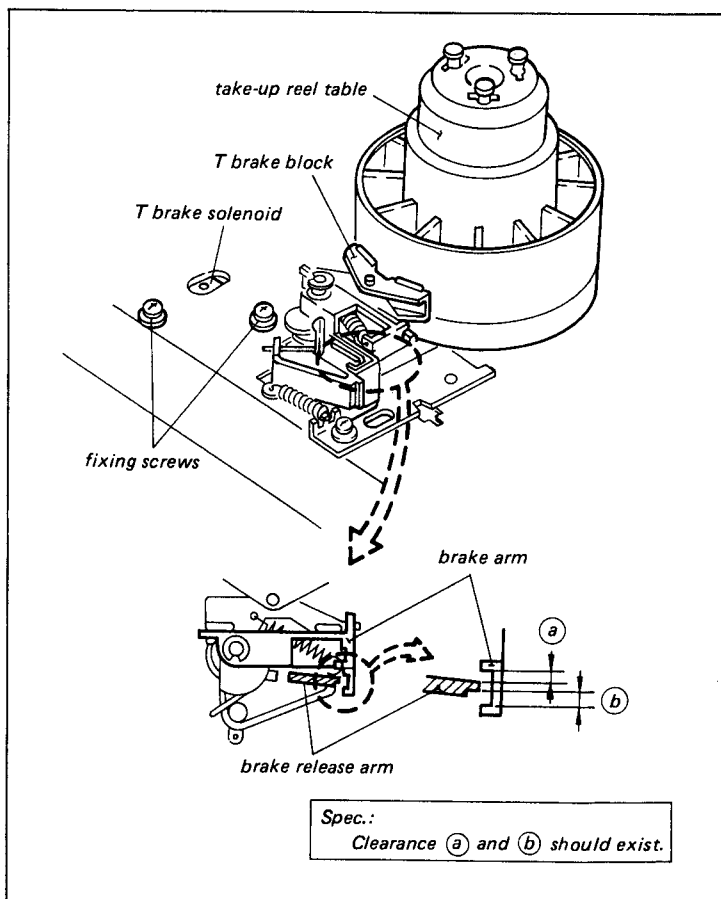
Mode: REW mode without cassette tape

Check procedure:

Check that the relationship between the brake release arm and the brake arm meets the required specification.

Adjustment procedure:

Adjust the position of the T brake solenoid so that meets the required specification.



5-7-6. S Brake Solenoid Position Adjustment

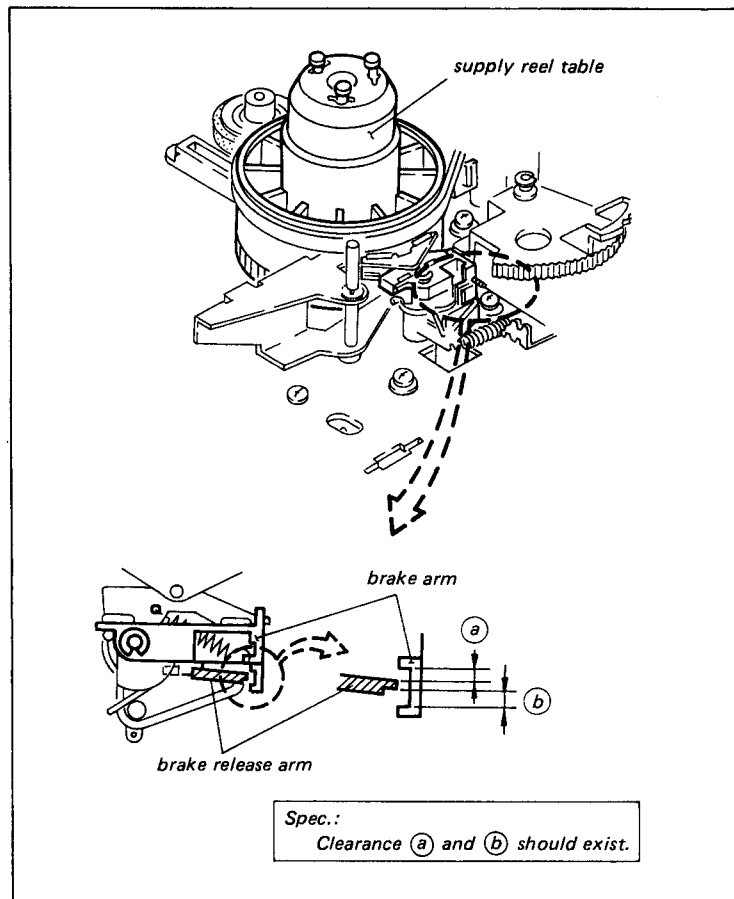
Mode: REW mode without cassette tape

Check procedure:

Check that the relationship between the brake release arm and the brake arm meets the required specification.

Adjustment procedure:

Adjust the position of the S brake solenoid so that meets the required specification.



5-8. CASSETTE-UP COMPARTMENT ADJUSTMENT

- The cassette-up compartment has two photo-electrical switches. The on/off timing of these switches are adjusted as follows.

5-8-1. Cassette-in Switch Position Adjustment

Tool and equipment:

KCA type cassette tape.
Tester.
Thickness gauge.

- Preparation:**
- Remove the cassette-up compartment from the chassis.
 - Connect the plug of the harness for cassette-up compartment and the terminal on the CC-9 board with the jumper leads.

plug of harness (CN1)	terminal on CC-9 board
4pin (5 V)	4pin/CN1
5 or 2pin (GND)	5 or 2pin/CN1

- Turn POWER on.

Check procedure:

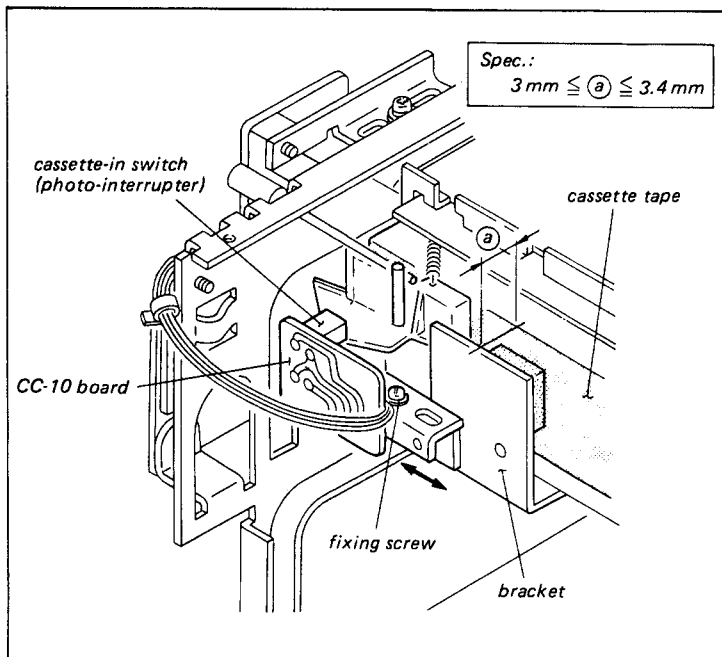
- Connect the tester to ② terminal on CC-9 board.
- Insert a KCA type cassette tape slowly.
- Check that the clearance between the front side of the cassette tape and the bracket of cassette-up compartment meets the required specification when the tester is turned "H" level (about 5 V).

Adjustment procedure:

- Adjust the position of the cassette-in switch in the direction of the arrow so that meets the required specification.

Adjusting procedure;

Insert a 3.3 mm thick thickness gauge between cassette tape and bracket. Adjust the position of the cassette-in switch so that the tester is turned to "H" in this position.



5-8-2. Cassette-down Switch Position Adjustment

Tool and equipment:

Tester

- Preparation**
- (1) Remove the cassette-up compartment from the chassis.
 - (2) Connect the plug of the harness for cassette-up compartment and the terminal on CC-9 board with the jumper leads.

plug of harness (CN1)	terminal on CC-9 board
4pin (5 V) ←	4pin/CN1
5 or 2pin (GND) ←	5 or 2pin/CN1

- (3) Turn POWER on.

Check procedure:

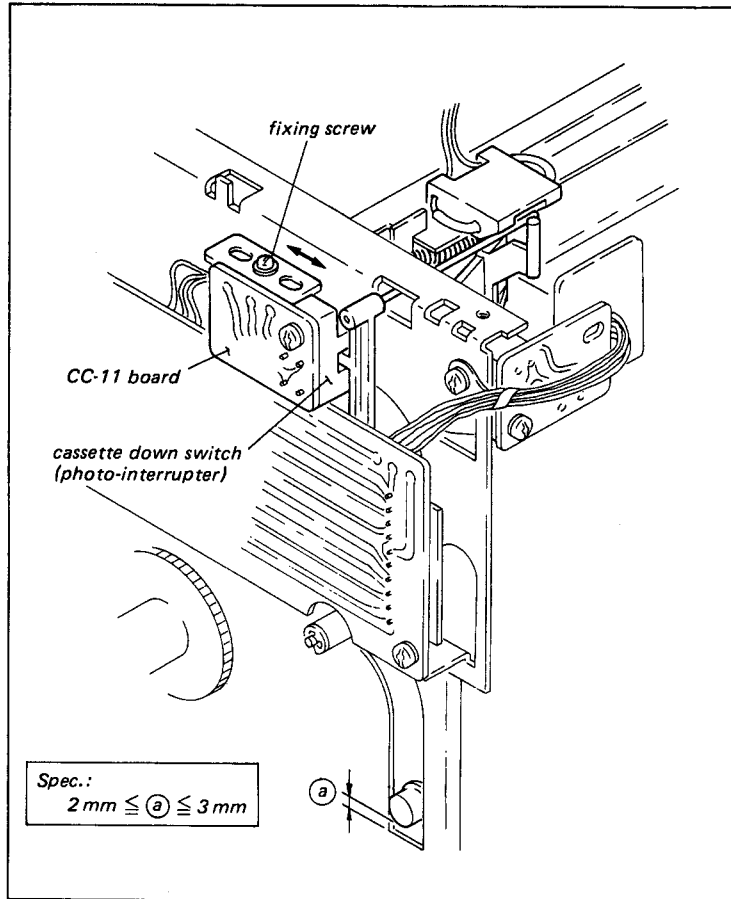
- (1) Connect the tester to ⑤ terminal on CC-9 board.
- (2) Turn the white colored gear on the right side of the cassette-up compartment in the clockwise direction.
- (3) Check that the clearance between the roller and the guide meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the cassette-down switch in the direction of the arrow so that meets the required specification.

Adjusting procedure;

Turn the gear on the right side so that the clearance between the roller and the guide is 2.2 mm clearance. Adjust the position of the cassette-down switch so that the tester is turned to "H" in this position.



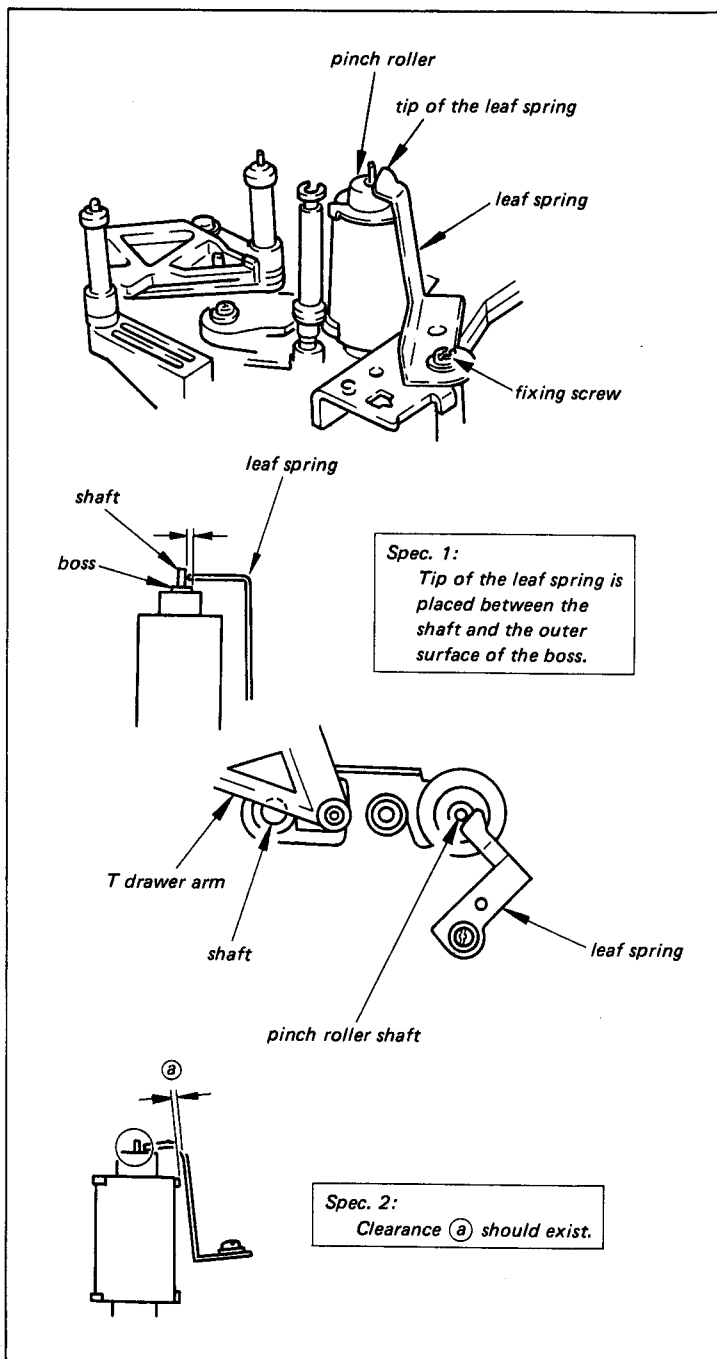
5-9. LEAF SPRING POSITION ADJUSTMENT

Check procedure:

- (1) Turn on POWER. Put the machine into the EJECT mode after put into the PLAY mode once.
- (2) Turn the gear box pulley with finger so that the edge of the T drawer arm is placed into the center of the shaft as shown in figure.
- (3) Check that the relationship between leaf spring and pinch roller shaft meets the required specification 1.
- (4) Put the machine into the EJECT completion mode. Check that the clearance between leaf spring and pinch roller.

Adjustment procedure:

- (1) Adjust the position of the leaf spring so that meets the required specifications.



5-10. PINCH LEVER RIGHT ANGLE ADJUSTMENT

This adjustment is precisely factory-calibrated before shipment so that no adjustment is required except the pinch lever and the capstan shaft replacement.

Tool : Pinch lever adjustment jig

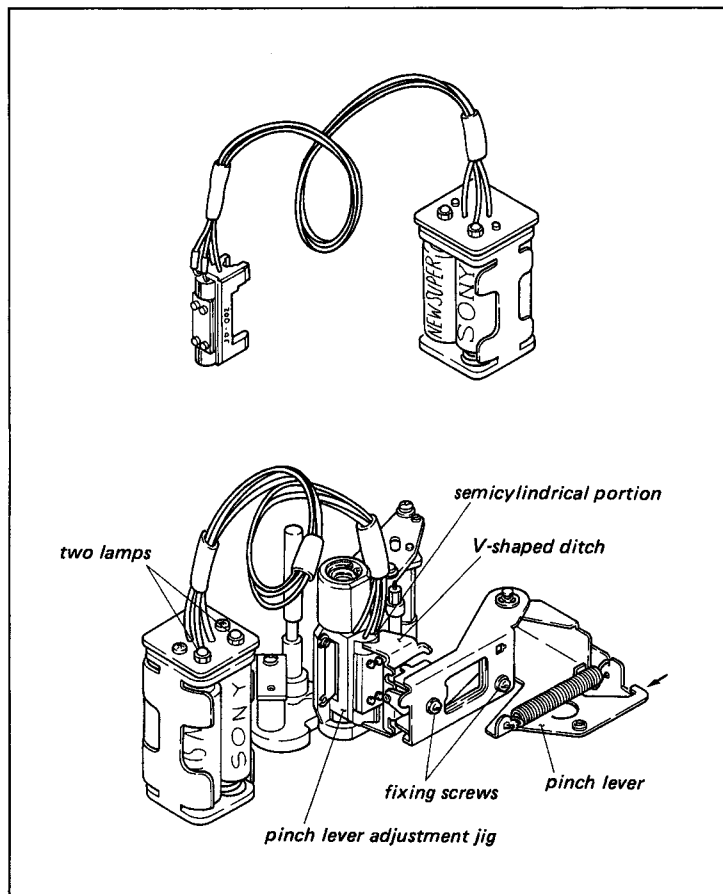
Mode : EJECT completion

Check procedure:

- (1) Install the pinch lever adjustment jig taking care not to give scar on the capstan.
- (2) Push the pinch lever until V-shaped ditch of the pinch lever contacts the semicylindrical portion of the jig lightly. Check that the two lamps of the jig light at the same time.

Adjustment procedure:

- (1) Loosen the two fixing screws of the pinch lever and adjust the V-shaped ditch to the correct position.
- (2) After this adjustment, tighten the fixing screws and check again.



SECTION 6

BACK TENSION AND TORQUE ALIGNMENT

6-1. BRAKE SYSTEM ADJUSTMENT

6-1-1. S Brake Torque Adjustment

Tool and equipment:

Reel table torque measurement tape
(100 mm dia.)
Tension scale (200 g full scale).

Mode: EJECT completion/POWER off.

Check procedure:

- (1) Grasp the top of the supply reel table with finger. Check that the clearance between the brake arm and the lining holder meets the required specification (1) as shown in figure as it is turned clockwise direction approx. 30 degrees.
- (2) Install the jig tape on the supply reel table and hook a tension scale on an end of the jig tape. Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

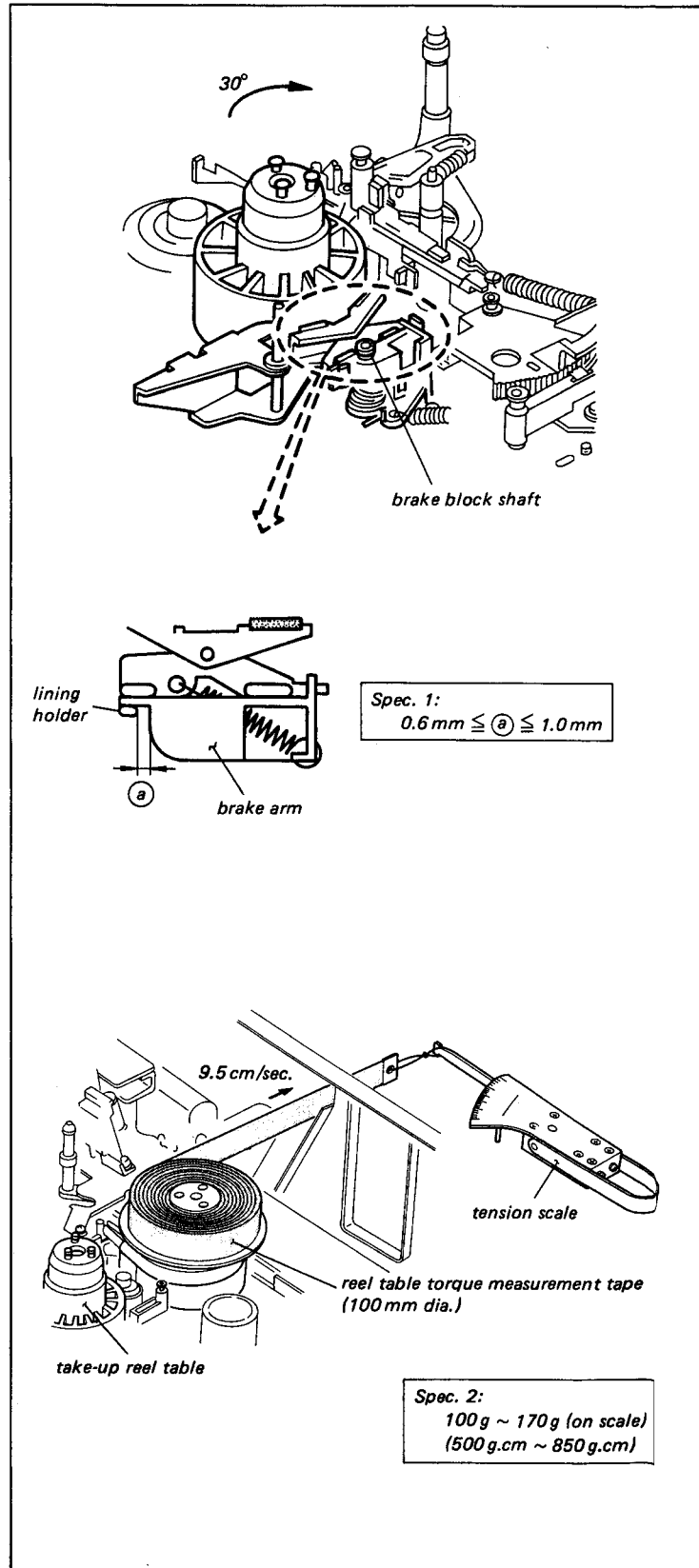
Adjustment procedure:

For spec. 1

- (1) Bend the brake block shaft toward the reel table or the opposite direction with finger.

For spec. 2

- (2) Clean the surface of the reel table with cloth moistened with cleaning fluid.
- (3) If the scale reading does not meet the specification (2), replace the lining holder and check again.
- (4) If not in step (2), replace the reel table and check again.



6-1-2. T Brake Torque Adjustment

Tool and equipment:

Reel table torque measurement tape
(100 mm dia.)
Tension scale (200 g full scale).

Mode: EJECT completion/POWER off.

Check procedure:

- (1) Grasp the top of the take-up reel table with finger. Check that the clearance between the brake arm and the lining holder meets the required specification (1) as shown in figure as it is turned clockwise direction approx. 30 degrees.
- (2) Install the jig tape on the take-up reel table and hook a tension scale on an end of the jig tape. While pushing the T tension regulator arm to the left as far as it will go, pull out the tape at the constant speed of approx. 9.5 cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

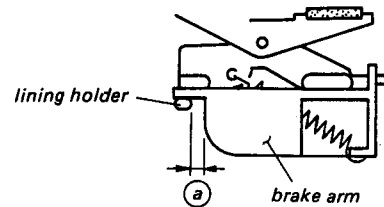
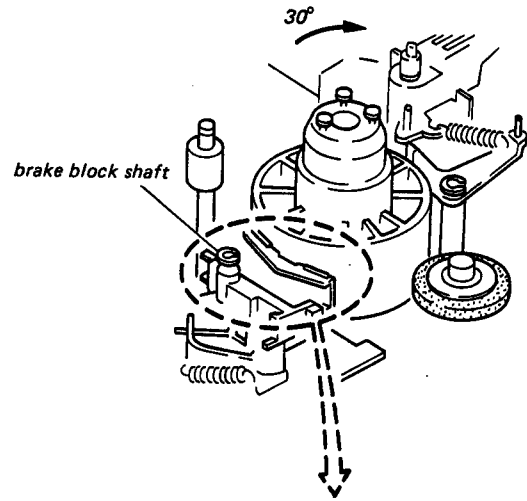
Adjustment procedure:

For spec. 1

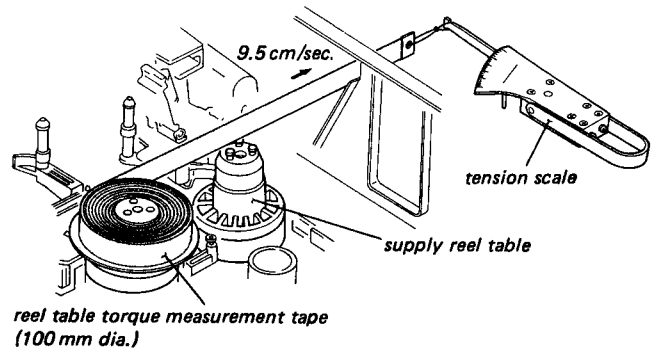
- (1) Bend the brake block shaft toward the reel table or the opposite direction with finger.

For spec. 2

- (2) Clean the surface of the reel table with cloth moistened with cleaning fluid.
- (3) If the scale reading does not meet the specification (2), replace the lining holder and check again.
- (4) If not in step (2), replace the reel table and check again.



Spec. 1:
 $0.6 \text{ mm} \leq a \leq 1.0 \text{ mm}$



Spec. 2:
100 g ~ 170 g (on scale)
(500 g.cm ~ 850 g.cm)

6-1-3. REW Brake Torque Adjustment

Tool and equipment:

Reel table torque measurement tape
(100 mm dia.)
Tension scale (50 g full scale)

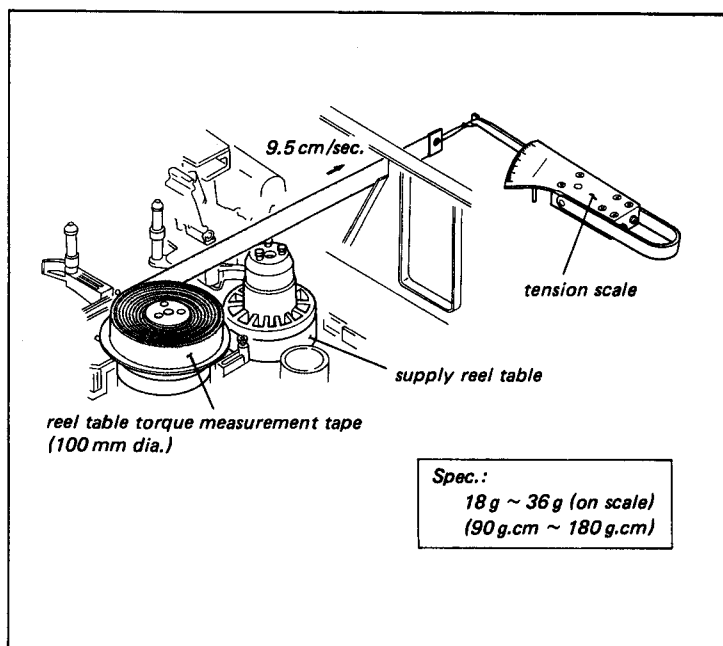
Mode: REW

Check procedure:

- (1) Install the jig tape on the take-up reel table and hook a tension scale on an end of the jig tape.
- (2) Put the machine into the REW mode. Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) If the scale reading does not meet the specification, replace the R brake ass'y and check again.
- (2) If not in step (1), replace the reel table and check again.



6-2. FF/REW TORQUE ADJUSTMENT

- It is required that the sec. 5-7-2 T idler solenoid position adj. and sec. 5-7-3 S idler solenoid position adj. are checked to be correct or properly adjusted before initiating this adjustment.

Tool and equipment:

Reel table torque measurement tape
(100 mm dia.)
Tension scale (500 g full scale).

Mode: FF and REW

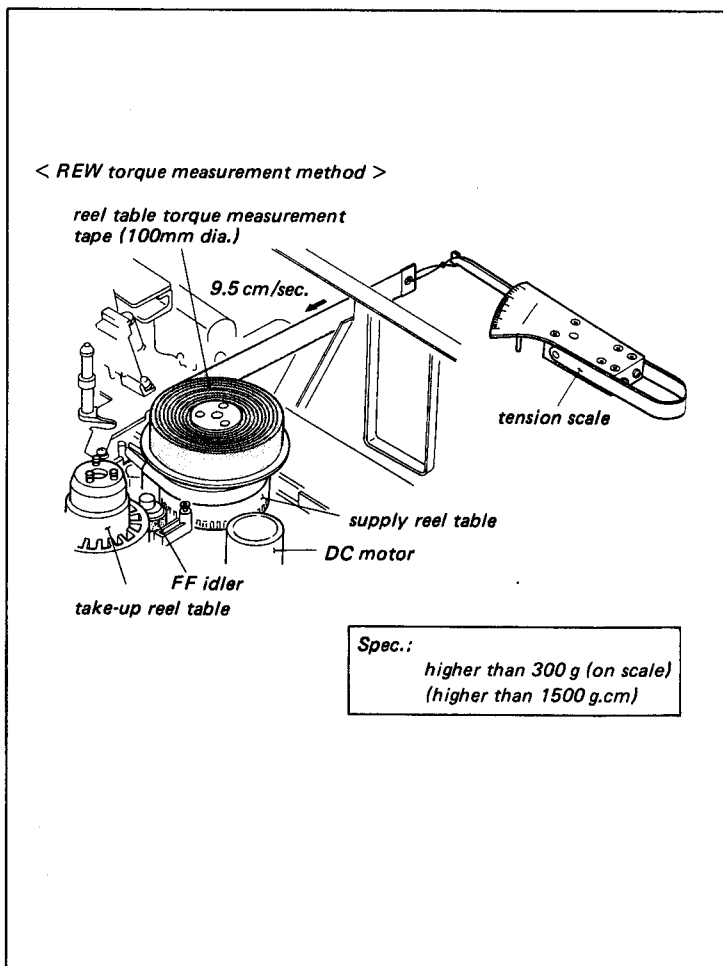
Check procedure:

FF torque

- (1) Install the jig tape on the take-up reel table and hook a tension scale on an end of the tape. Pull out the tape.
- (2) Put the machine into FF mode. Let the tape pulled at the constant speed of approx. 9.5 cm/sec. check that the scale reading meets the required specification.

REW torque

- (3) Install the jig tape on the supply reel table and hook a tension scale on an end of the tape. Pull out the tape.
- (4) Put the machine into the REW mode. Let the tape pulled at the constant speed of approx. 9.5 cm/sec. Check that the scale reading meets the required specification.



Adjustment procedure:

Both FF torque and REW torque are adjusted by the following adjustment procedures.

- (1) Clean the surface of the reel table, FF idler and belt with cloth moistened with cleaning fluid. Check the torque again.
- (2) If not in step (1), put the machine into FF or REW mode without cassette and check that the dc voltage at the terminals of dc motor is $10.5\text{ V} \pm 1.5\text{ V}$ in the FF or REW mode. If the dc voltage is out of spec., check that the circuit operation of MR board operates correctly.
- (3) If not in steps (1) and (2), replace the reel table, FF idler and belt.

6-3. FWD TORQUE ADJUSTMENT

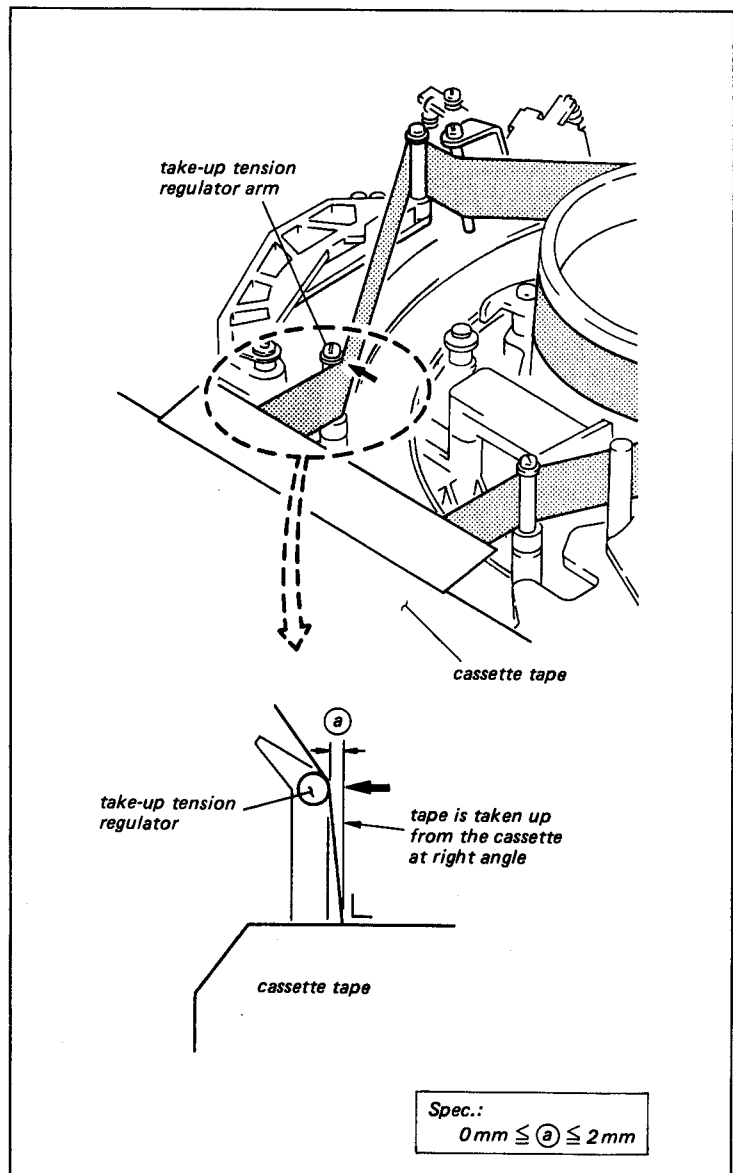
Mode: FWD/SEARCH FWD

Check procedure:

- (1) Install the KCS-20 cassette tape at the tape end portion.
- (2) Put the machine into the FWD mode. Check that the relationship between the T tension regulator arm and cassette tape meets the required specification.
- (3) Install the KCA-60 cassette tape at the tape end portion.
- (4) Put the machine into SEARCH FWD mode.
- (5) Check that the tape runs without slack around the T tension regulator arm.
- (6) Push the T tension regulator arm to the left as far as it will go, check that the tape slack is occurred around the T tension regulator arm.

Adjustment procedure:

- (1) Adjust RV-1 on MR-8A or MR-11B board meets the required specification in FWD mode.
- (2) Confirm as check procedures (3) ~ (6).



6-4. REV TORQUE ADJUSTMENT

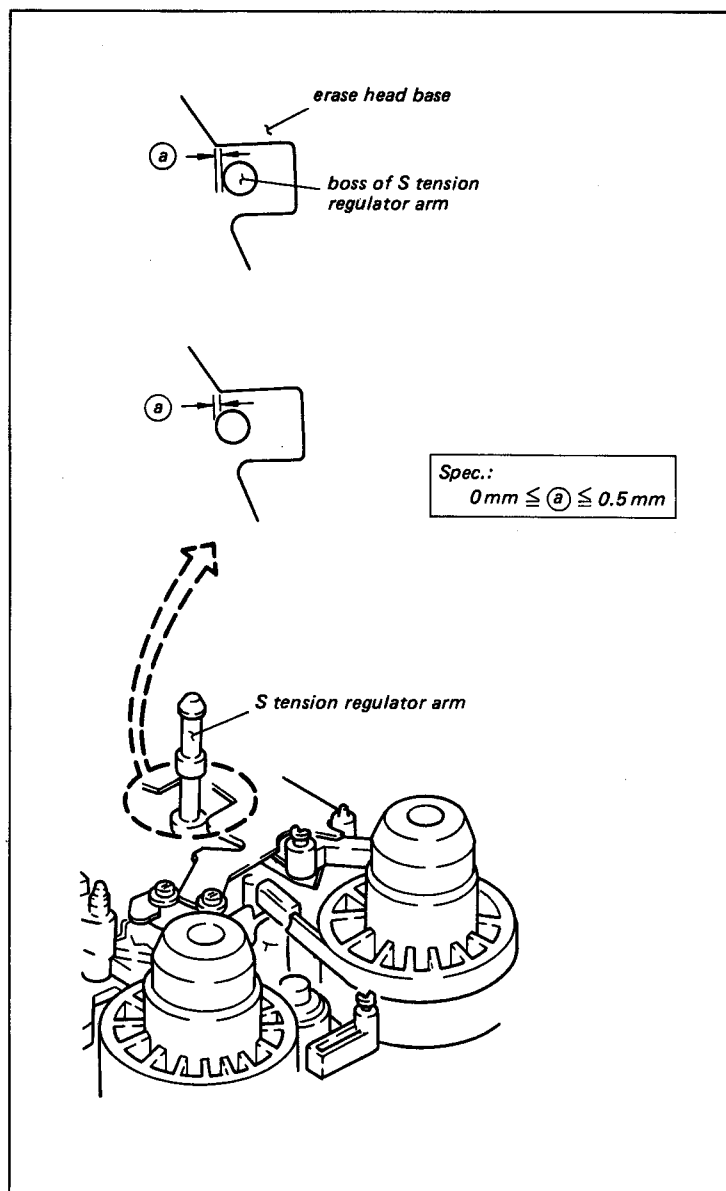
Mode: SEARCH REV mode

Check procedure:

- (1) Install the KCS-20 cassette tape at the tape beginning portion.
- (2) Put the machine into SEARCH REV mode.
- (3) Check that the relationship between the boss of S tension regulator and the bracket of erase head base meets the required specification.

Adjustment procedure:

- (1) Adjust RV-2 on MR-8A or MR-11B board meets the required specification.



65. FF BACK TENSION ADJUSTMENT

- It is required that the sec. 5-6-3 supply tension regulator operating position adj. is checked to be correct or properly adjusted before initiating this adjustment.
- It is required that the sec. 6-6 FWD back tension adj. is performed after this adjustment.

Tool and equipment:

Back tension adjustment jig.
Reel table torque measurement tape
(100 mm dia.)
Tension scale (50 g full scale)

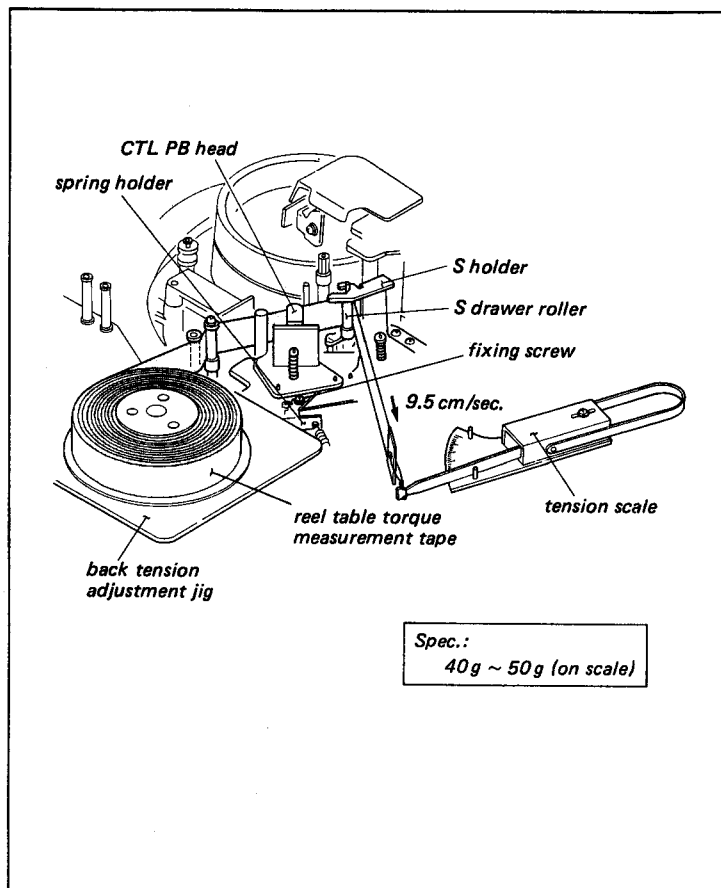
- Preparation:**
- (1) Turn POWER on in FR-STOP mode. (When POWER on, the S drawer roller moves to the FR-STOP position and put the machine into FR-STOP mode automatically.)
 - (2) Turn the pulley of gear box block in the clockwise direction viewing from the front panel with finger so that the S drawer roller places in front of the CTL PB head.
 - (3) Install the back tension adjustment jig.
 - (4) Install the jig tape on the supply reel table and thread the tape as shown in figure. Check that the tape does not curl at the flange of S drawer roller.
 - (5) Turn the pulley in opposite direction in step 2) so that the S drawer roller is engaged with the S holder.
 - (6) Hook a tension scale on an end of tape.

Check procedure:

- (1) Press the FF button and put into FF mode.
- (2) Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction.
Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the spring holder meets the required specification with flat blade screwdriver, 3 mm dia.
- (2) Check that the scale reading meets the required specification once refer to the check procedure.
- (3) Perform sec. 6-6 FWD back tension adjustment.



6-6. FWD BACK TENSION ADJUSTMENT

- It is required that the sec. 5-6-3 supply tension regulator operating position adj. and sec. 6-5 FF back tension adj. are checked to be correct or properly adjusted before initiating this adjustment.

Tool and equipment:

Back tension adjustment jig.
Reel table torque measurement tape
(100 mm dia.)
Tension scale (100 g full scale)

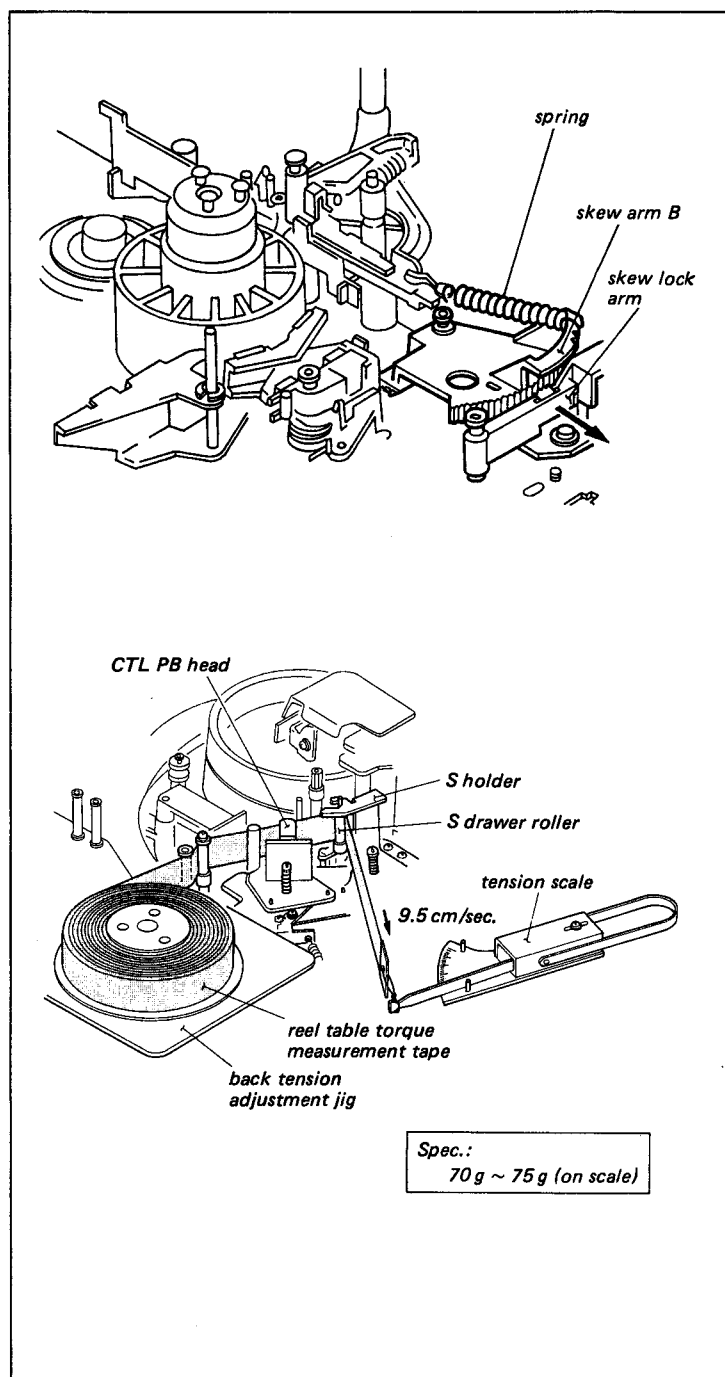
- Preparation:**
- Push the skew arm in the arrow direction.
 - Turn on the POWER and put the machine into the FR-STOP mode. (When turn on the POWER, the S drawer roller moves to the FR-STOP position and put the machine into the FR-STOP mode automatically.)
 - Turn the pulley of gear box block in the clockwise direction viewing from the front panel with finger so that the S drawer roller places in front of the CTL PB head.
 - Install the back tension adjustment jig.
 - Install the jig tape on the supply reel table and thread the tape as shown in figure.
Check that the tape does not curl at the flange on S drawer roller.
 - Turn the pulley in opposite direction in step (3) so that the S drawer roller is engaged with the S holder.
 - Hook a tension scale on an end of tape.

Check procedure:

- Press the PLAY button and put into PLAY mode.
- Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction.
Check that the scale reading meets the required specification.

Adjustment procedure:

- Select the proper spring hook of the skew arm B so that the scale reading meets the required specification.
- After this adjustment, check again refer to check procedure.



SECTION 7

TAPE RUN ALIGNMENT

7-1. FF/REW MODES TAPE PATH ADJUSTMENT

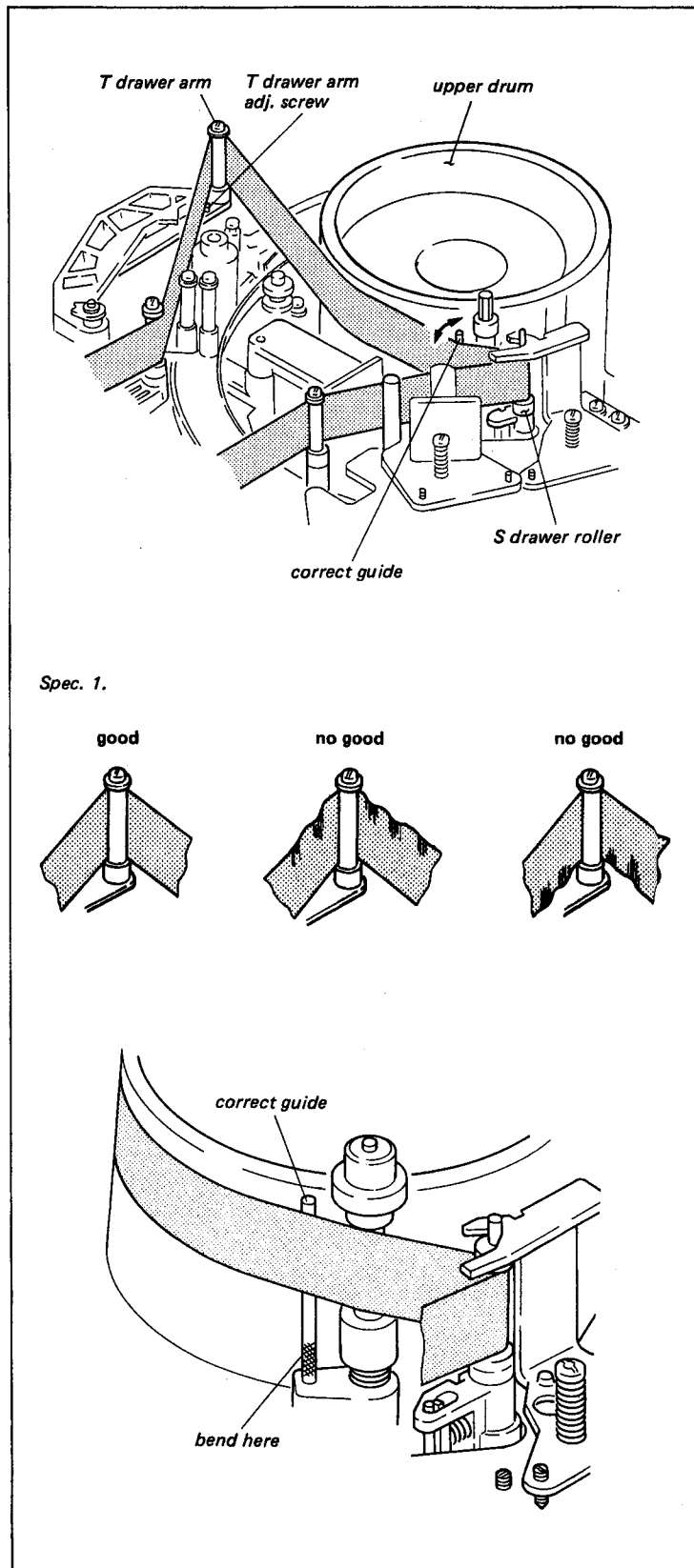
Mode: FF and REW

Check procedure:

- (1) Install KCA-60 cassette tape (use the middle portion of the tape). Put the machine into REW mode.
- (2) Observe the surface of the running tape very carefully around T drawer arm. Check that the tape tension is exactly equal at the tape top and tape bottom. (Spec. 1)
- (3) Check that the tape runs without curl at the upper or lower flange of S drawer roller in the REW mode. (Spec. 2)
- (4) Put the machine once into the STOP mode, and put into the REW mode. Check that the tape runs without curl at the S drawer roller in the moment of just after the REW mode. (Spec. 3)
- (5) Put the machine into FF mode. Check that the tape runs without curl at the S drawer roller and T drawer arm in the moment of just after the FF mode. (Spec. 4)
- (6) Put the machine into FWD mode. Check that the top of the correct guide pin does not contact with the tape and drum. (Spec. 5)

Adjustment procedure:

- Spec. 1**
- (1) Adjust the slantness of T drawer arm by turning the T drawer arm adjusting screw.
- Spec. 2**
- (2) Bend the bottom of the correct guide with pliers in the arrow direction.
- Spec. 3**
- (3) Fine bend the bottom of the correct guide with pliers to satisfies the spec. 2) and 3).
- Spec. 4**
- (4) Fine adjust the slantness of the T drawer arm by turning the T drawer arm adjusting screw to satisfies the spec. 1) and 4).



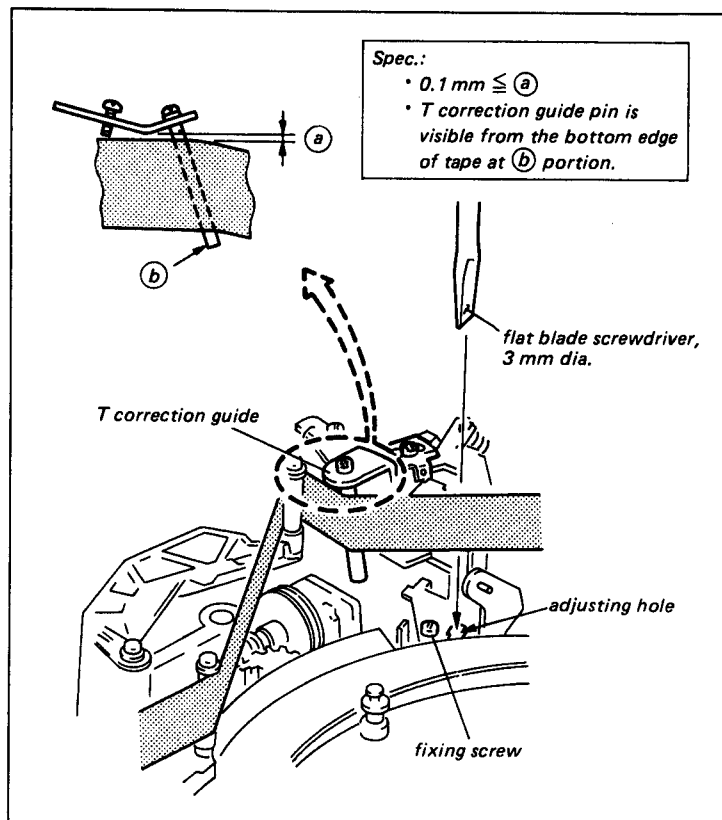
7-2. T CORRECTION GUIDE SLANTNESS ADJUSTMENT

Check procedure:

- (1) Install KCA-60 cassette tape, and put the machine into the FR-STOP mode.
- (2) Press the PLAY button. The threading operation starts. Turn off the POWER when the pinch roller is pathed in front of the T correction guide.
- (3) Check that the clearance between the tape top edge and the upper bracket of T correction guide meets the required specification.

Adjustment procedure:

- (1) Adjust the position of T correction guide with flat blade screwdriver 3 mm dia. meets the required specification.
- (2) After this adjustment, perform sec. 7-3 FWD mode tape path adjustment (1).



7-3. FWD MODE TAPE PATH ADJUSTMENT (1)

- It is required that the sec. 7-2 T correction guide slantness adj. and sec. 7-1 FF/REW modes tape path adj. are checked to be correct or properly adjusted before initiating this adjustment.

Mode: FWD

Check procedure:

- (1) Install KCA-60 cassette tape (after the KCA-60 tape has run after 30 minutes). Put the machine into FWD mode.
- (2) Check that the tape runs without curl at the upper or lower flange of T drawer arm. (Spec. 1)
- (3) Check that the tape tension is exactly equal at the tape top and tape bottom, and the tape runs without curl at the lower flange of T drawer arm. (Spec. 2)

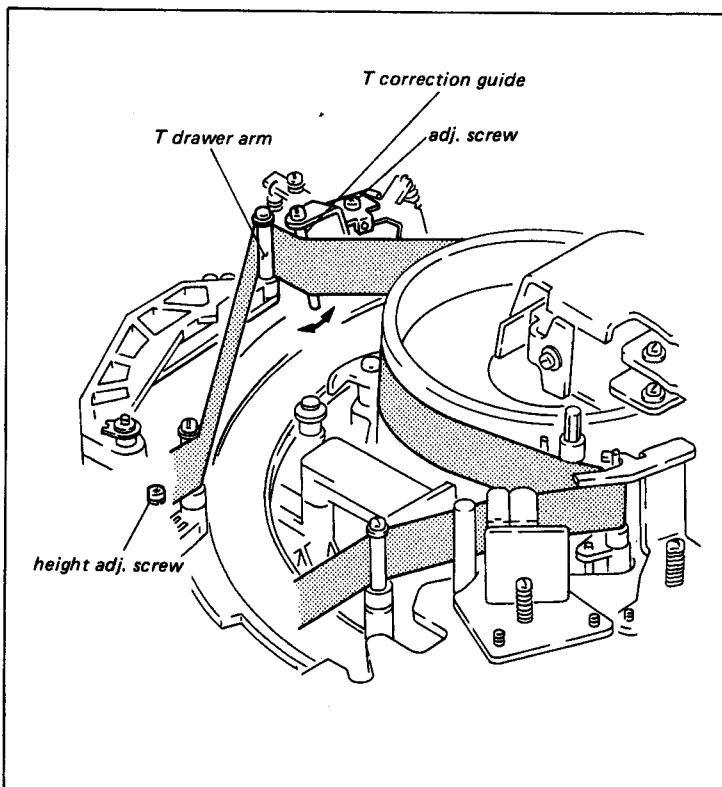
Adjustment procedure:

Spec. 1

- (1) Adjust the height of T drawer arm by turning the T drawer arm height adjusting screw.

Spec. 2

- (2) Adjust the T correction guide in the arrow direction by adjusting screw.



7-4. FWD MODE TAPE PATH ADJUSTMENT (2)

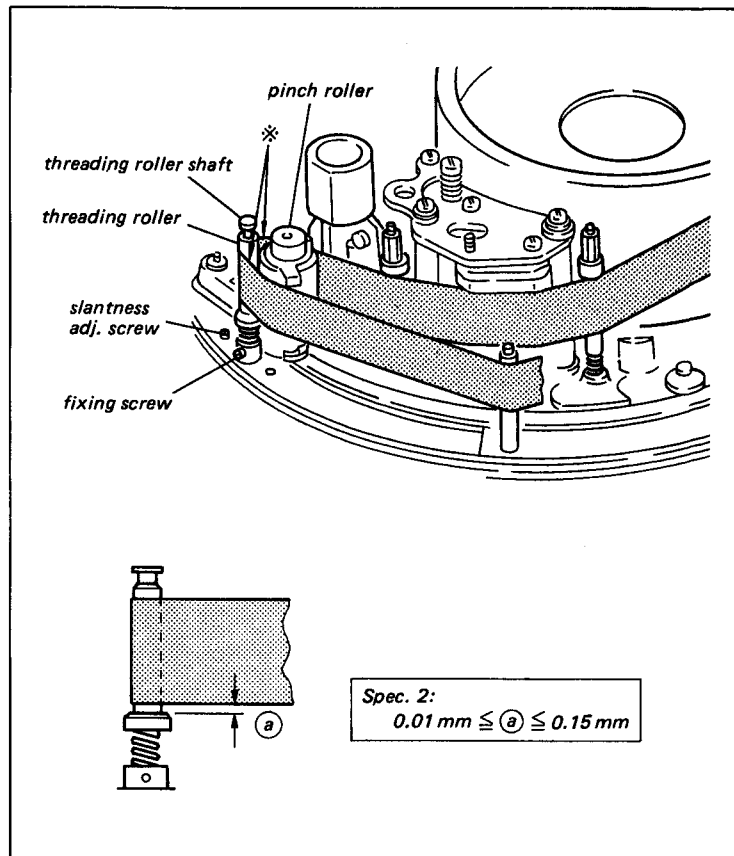
Mode: FWD

Check procedure:

- (1) Install KCA-60 cassette tape (use the middle portion of the tape). Put the machine into FWD mode.
- (2) Check to see carefully two positions indicated by the * mark in figure, check that the tape tension is exactly equal at the tape top and tape bottom. (Spec. 1)
- (3) Check that the clearance between the lower flange of threading roller and the tape bottom edge meets the required specification (2).

Adjustment procedure:

- (1) Loosen the fixing screw in the bottom of the threading roller as shown in figure.
- Spec. 1
- (2) Adjust the slantness of the threading roller by turning the slantness adjusting screw.
- Spec. 2
- (3) Adjust the height of the threading roller by turning the threading roller shaft.
 - (4) Check again that the slantness and height meets the required specification 1) and 2).



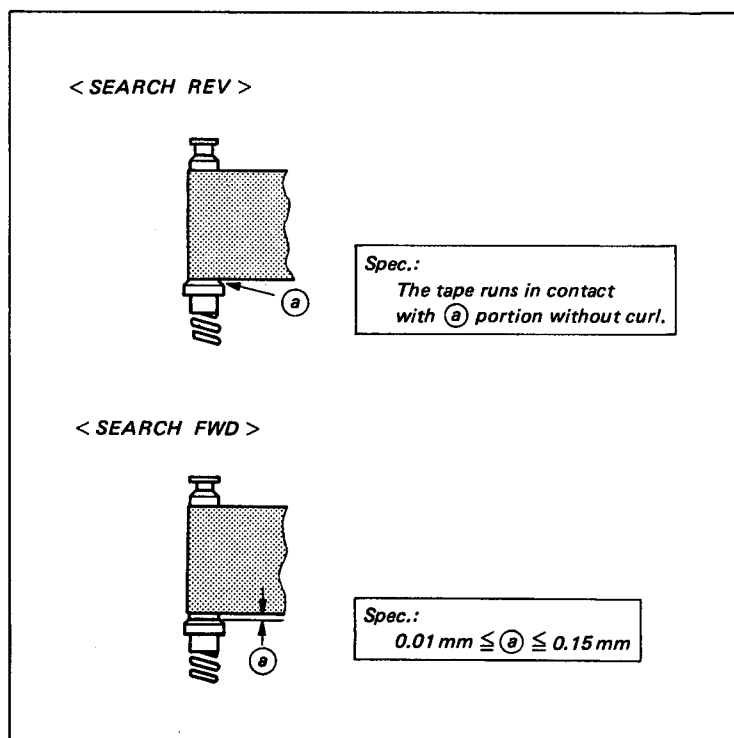
7-5. REV MODE TAPE PATH ADJUSTMENT

Check procedure:

- (1) Install KCA-60 cassette tape (use the middle portion of the tape).
- (2) Put the machine into SEARCH REV mode. Check that the tape runs in contact with the lower flange of the threading roller without curl.
- (3) Put the machine into SEARCH FWD mode. Check that the clearance between the lower flange of the threading roller and the tape bottom edge meets the required specification and the tape does not curl at the lower or upper flange of TG-IV.

Adjustment procedure:

- (1) Fine adjust the height of the threading roller by turning the threading roller shaft.
- (2) After this adjustment, perform sec. 7-4 FWD mode tape path adjustment (2).



7-6. TAPE PATH ADJUSTMENT AROUND PINCH ROLLER

7-6-1. Tape Wrinkle Remove Adjustment

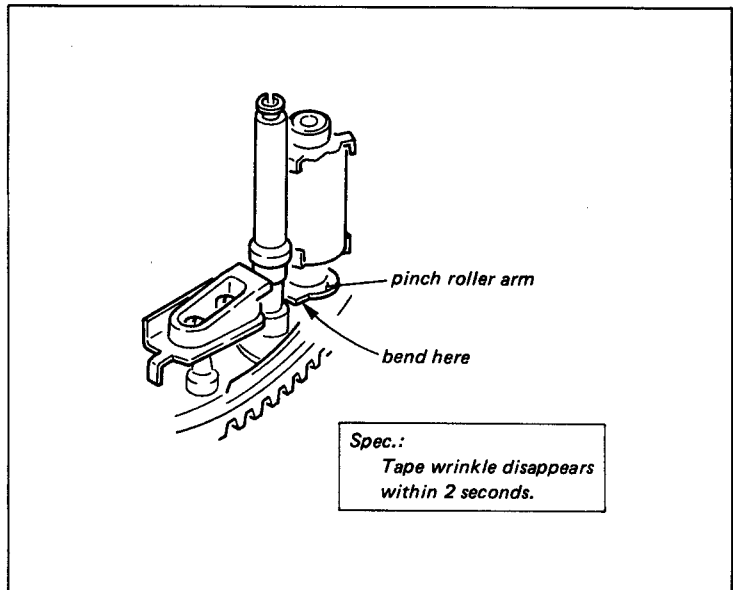
- The first priority of this adjustment is to remove the tape wrinkle around the pinch roller, happening in the moment of just after the pinch roller pressing against the capstan.
- If the tape wrinkle is generated, perform sec. 7-6-2 pinch roller slantness adjustment at first. After this adjustment performed, fine adjust this adjustment once again.

Check procedure:

- (1) Install KCA-60 cassette tape at the tape beginning portion.
- (2) Put the machine into FWD mode, SEARCH REV mode, repeat SEARCH REV and SEARCH FWD mode, PAUSE ON/OFF mode in the REC mode, and PAUSE ON/OFF mode in the playback mode. Check that the tape wrinkle does not appear or disappear within specified time when the tape runs toward the specified direction in these modes.

Adjustment procedure:

- (1) Perform sec. 7-6-2 pinch roller slantness adjustment.
- (2) Check the tape wrinkle refer to check procedure. If not, bend the pinch roller arm.



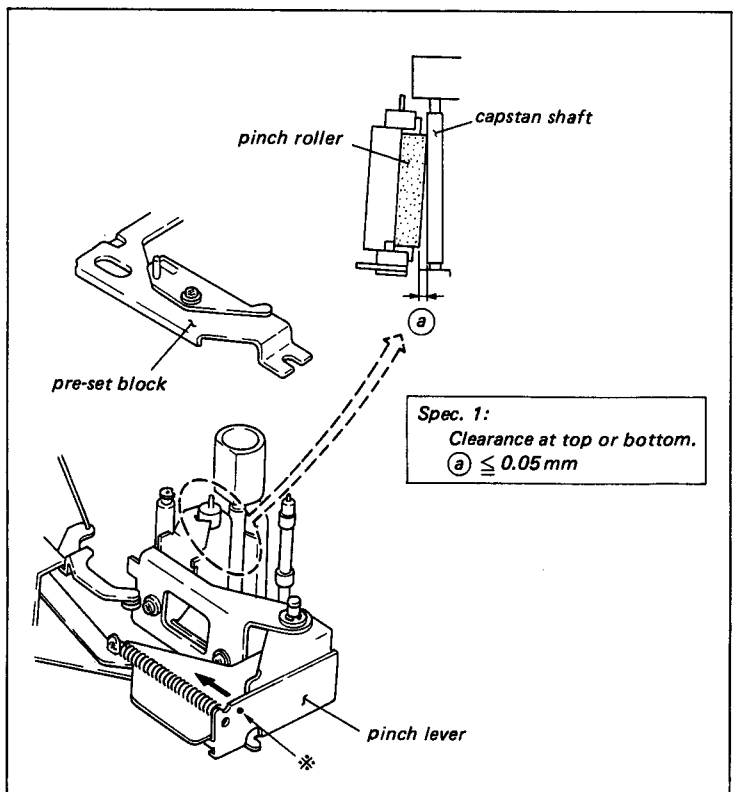
7-6-2. Pinch Roller Slantness Adjustment

Mode: Threading completion mode without cassette tape.

Check procedure:

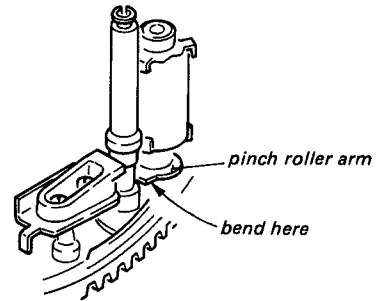
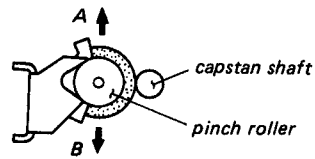
- (1) Remove the pinch roller pre-set bracket.
- (2) Put the machine into the threading completion mode without cassette tape. Turn POWER off.
- (3) Push lightly the * marked portion of the pinch lever in the arrow direction with finger.
- (4) When the upper or lower section of the pinch roller came into contact with the capstan shaft. Check that the clearance between the lower or upper section of the pinch roller and the capstan shaft meets the required specification (1).
- (5) Push lightly the * marked portion of the pinch lever in the arrow direction with finger.

Just before the pinch roller comes into contact with the capstan shaft, check that the upper section of the pinch roller does not move in the "A" direction nor "B" direction as observed by eye, visually. (Spec. 2)



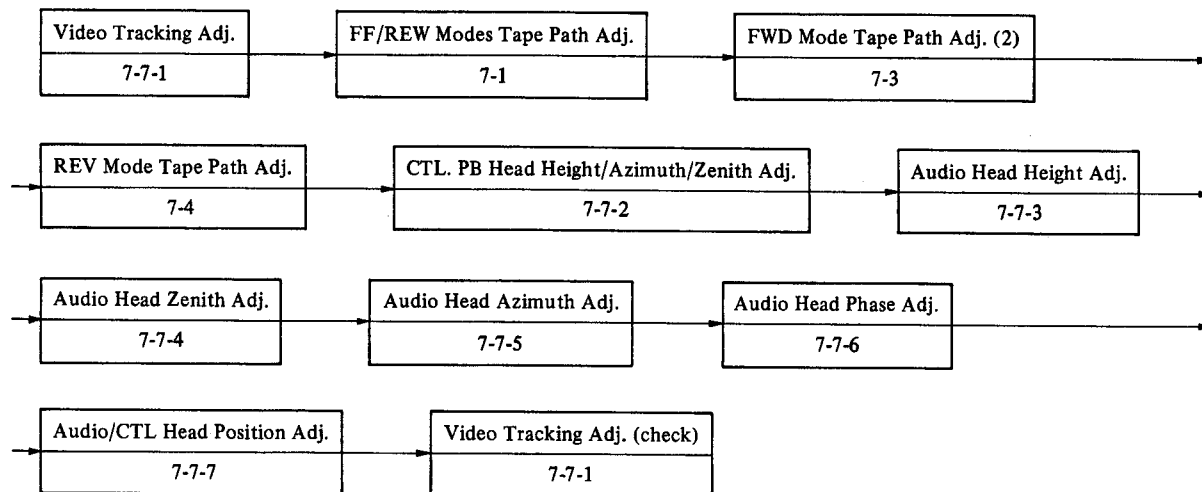
Adjustment procedure:

- (1) Turn POWER on. The threading ring put into the unthreading operation. Turn POWER off in the moment when the pinch roller comes in front of the audio/CTL head.
- (2) Bend the pinch roller arm.
- (3) Check that the pinch roller slantness meets the required specification referring to check procedure. If not, repeat the foregoing step 2) until the specification 1) and 2) are met.
- (4) Install the pinch roller pre-set bracket, and perform sec. 5-4-2 pinch roller pre-set adj.



7-7. TRACKING ADJUSTMENT

The tracking adjustment is required to be performed as following steps.



The tracking adjustment is required to be performed as following steps.

7-7-1. Video Tracking Adjustment

Tool and equipment:

Alignment tape, RR5-2SA-PAL
Flatness plate
Oscilloscope

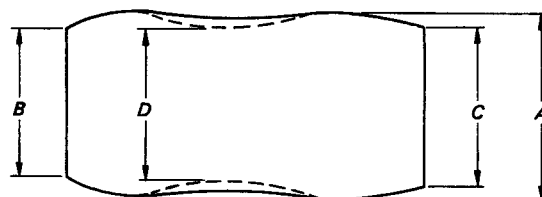
- Preparation:**
- (1) Connect the oscilloscope to TP29/VP-13 board, and EXT.TRIG. from TP21/VP-13 board.
 - (2) Play back the color-bar segment of alignment tape.

Check procedure:

- (1) While observing the waveform on the scope, turn the TRACKING control in both directions noting that the RF waveform maintains a flat envelope while the amplitude increases and decreases.
- (2) Adjust the TRACKING control so that the RF envelope is just before starting to decrease. Check that the RF envelope fluctuation and head-to-tape contact are within the specification.

Adjustment procedure:

- When the video tracking adjustment is performed, the drum entrance side tape guide's height adjustment is usually not required. But when this guide (TG-II) is replaced or removed, adjust the height of this guide so that the tape runs at the center of this guide without tape runs in contact with upper or lower flange.



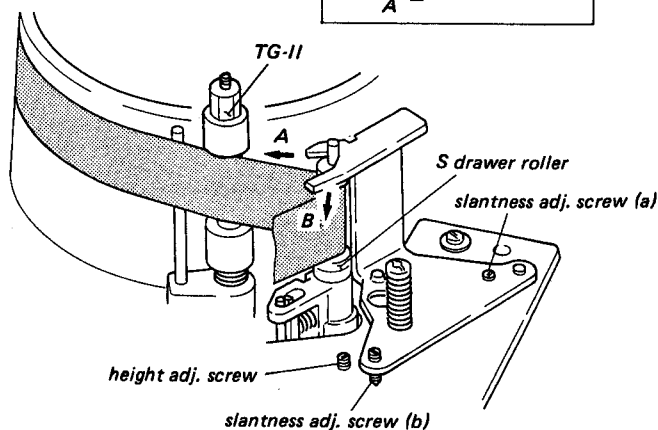
Spec.:

< head to tape contact >

$$\frac{B}{A} \geq 0.70 \quad \frac{C}{A} \geq 0.70$$

< fluctuation >

$$\frac{D}{A} \geq 0.90$$



- S drawer roller unit has three adjusting screws. These three adjusting screws functions as follows.

(i) Slantness adjusting screw (a)
Turning this screw in the clockwise direction, the upper section of S drawer roller slants in the arrow "A" direction.

(ii) Slantness adjusting screw (b)
Turning this screw in the counter clockwise direction, the upper section of S drawer roller slants in the arrow "B" direction.

The RF envelope meets the required specification but tape runs curl at upper flange of S drawer roller, this screw is only used in this manner to remove tape curl.

(iii) Height adjusting screw
Turning this screw in the clockwise direction, makes the height of S drawer roller lower.

- When the drum exit side tape guides (TG-III, TG-IV) adjustment are performed, loosen the locking screw 1 ~ 2 turns and adjust the height by turning the height adjusting nut.

- When the tracking at the drum's input side is no good.

- (1) Set the TRACKING control so that the RF envelope amplitude is made to 70 ~ 80% of the maximum amplitude.
- (2) Adjust height and slantness of S drawer roller by turning the height adjusting screw and slantness adjusting screw (a) so that the RF envelope is flat.

(CAUTION)

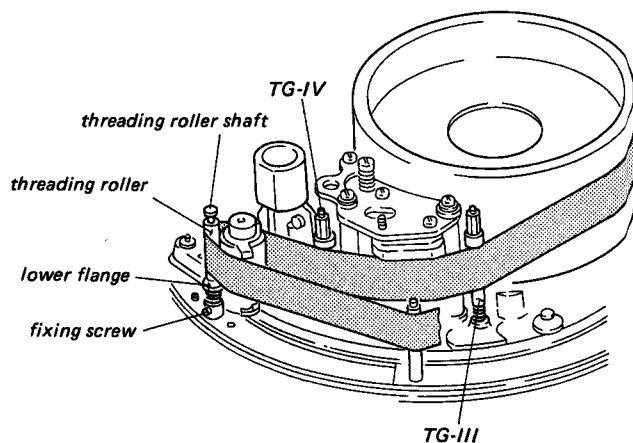
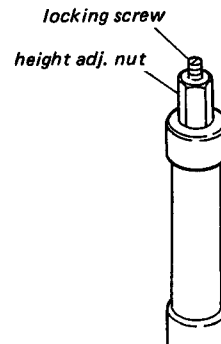
- (i) Observe the surface of the running tape very carefully around S drawer roller. Check that the tape tension is exactly equal at the tape top and tape bottom.
- (ii) Check that the tape runs in contact with the upper flange of S drawer roller without tape curl.

- When the tracking at the drum's center portion is no good. It is required that the drum's input side tracking adjustment to be correctly adjusted before initiating this adjustment.

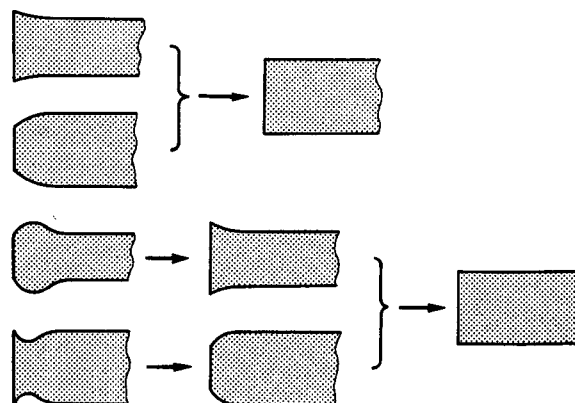
- (3) Set the TRACKING control so that the RF envelope amplitude is made to 70 ~ 80% of the maximum amplitude.

- (4) Adjust height and slantness of S drawer roller by turning the height adjusting screw and slantness adjusting screw (a) so that the RF envelope is flat.

(TG-III)
(TG-IV)



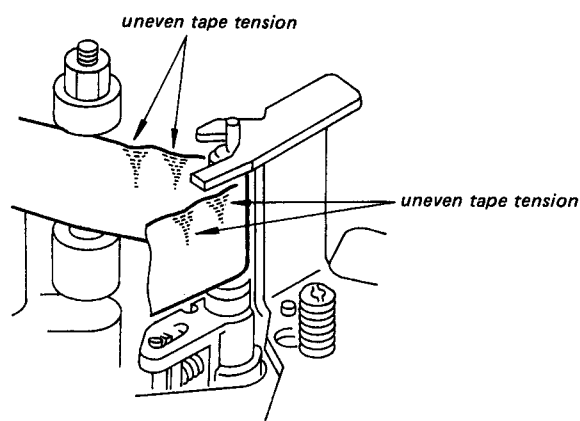
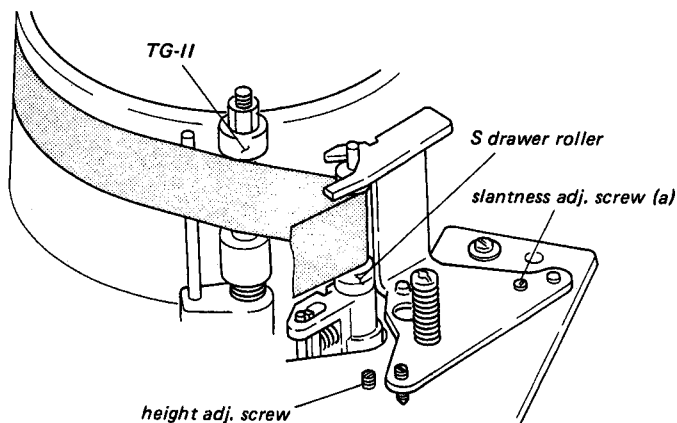
< drum entrance side >



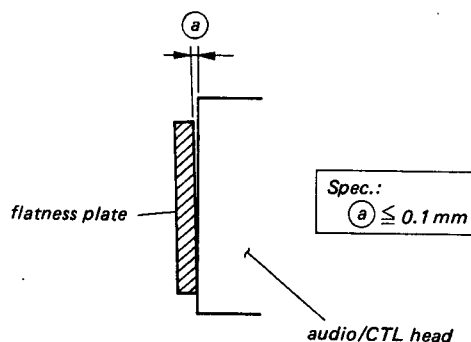
TAPE RUN

(CAUTION)

- (i) Adjust the slantness adjusting screw (a) in the clockwise within 10 degrees.
- (ii) When the drum's center portion tracking adjustment performs, the drum's input side tracking must maintain to flat.
- (iii) Check that the tape runs in contact with the upper flange of S drawer roller without tape curl.
- (5) When the RF envelope is not flat with step 4), adjust height of TG-III and TG-IV.
- (6) When the RF envelope is not flat with steps 4) and 5), adjust zenith of the audio/CTL head within the allowable range. Adjust height of TG-III and TG-IV once again.
- (7) Check that the clearance between the tape bottom edge and the lower flange of threading roller is 0.01 mm ~ 0.15 mm clearance. If not, perform height adjustment of threading roller by turning the threading roller shaft.

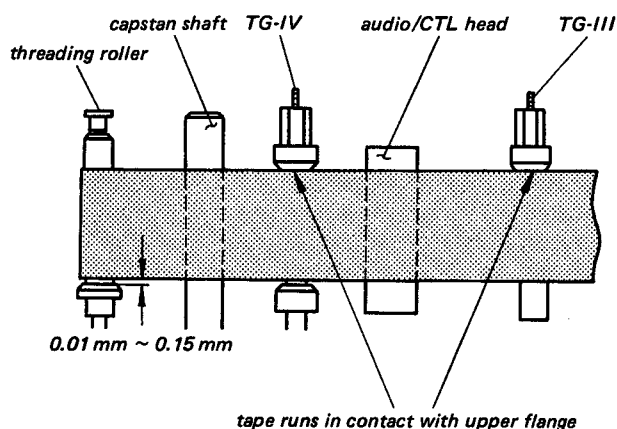
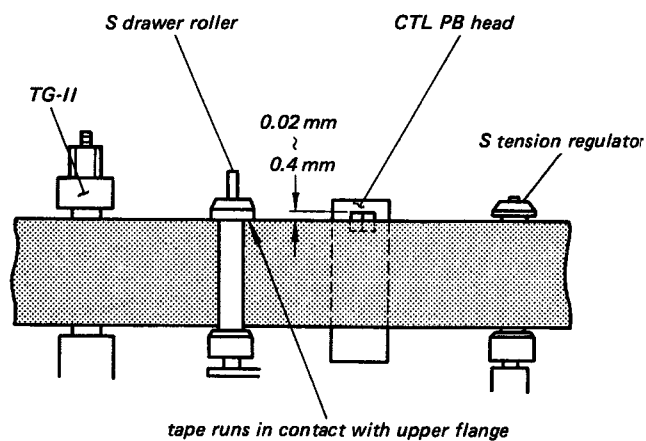
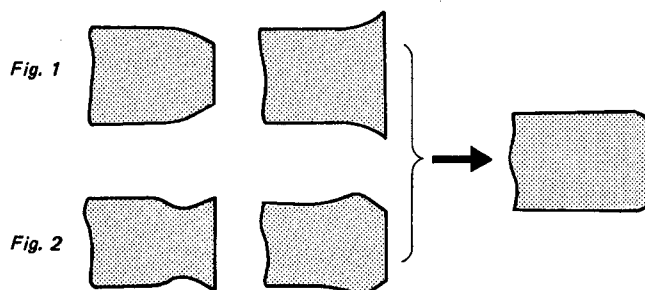


< zenith adj. for audio/CTL head >



- When the tracking at the drum's exit side is no good.
- (8) Set the TRACKING control so that the RF envelope amplitude is made to 70 ~ 80% of the maximum amplitude.
 - (9) When the RF envelope is not flat as shown in figure 1, adjust height of TG-IV so that the RF envelope is flat. After this adjustment, adjust height of TG-III so that the tape runs in contact with upper flange. When the RF envelope is not flat as shown in figure 2, adjust height of TG-III and TG-IV so that the RF envelope is flat. If it does not with this adjustment, adjust the zenith of the audio/CTL head within the allowable range. Adjust the height of TG-III and TG-IV.
 - (10) Check that the clearance between the tape bottom edge and the lower flange of threading roller is 0.01 mm ~ 0.15 mm clearance. If not, perform height adjustment of threading roller by turning the threading roller shaft.

< drum exit side >



TAPE RUN

7-7-2. CTL PB Head Height/Azimuth/Zenith Adjustments

- CTL PB head height, azimuth, and zenith adjustments are closely related. If any one of these three adjustments is attempted, perform the rest of two adjustments at the same time.

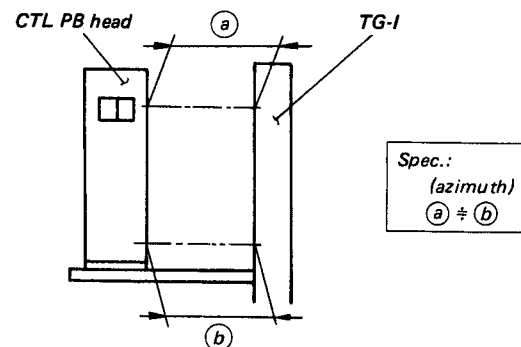
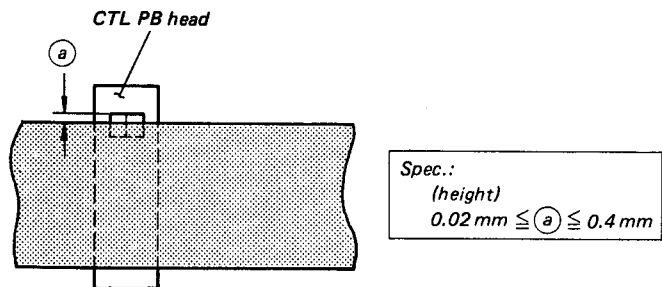
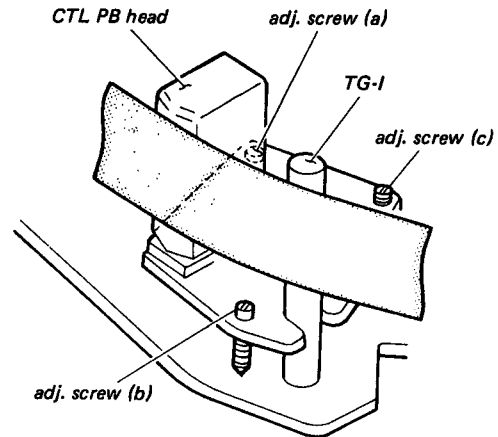
Tool and equipment:
Flatness plate

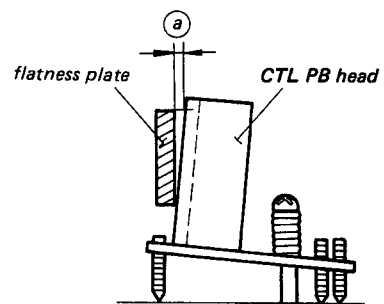
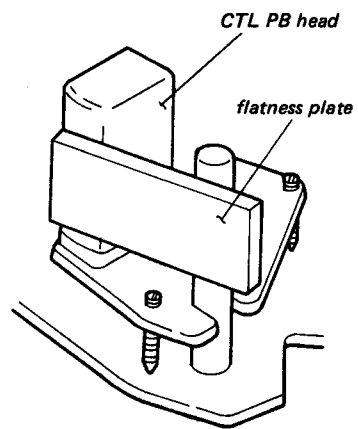
Check procedure:

- Check that at the top and bottom clearances between CTL PB head and TG-I meets the required specification. (Spec. 2: Azimuth check)
- Check that the clearance between the CTL PB head and flatness plate meets the required specification, when the flatness plate set on the CTL PB head and TG-I. (Spec. 3: Zenith check)
- Install a cassette tape, and put the machine into FWD mode.
- Check that the relationship between the top edge of tape and CTL PB head meets the required specification. (Spec. 1: Height check)

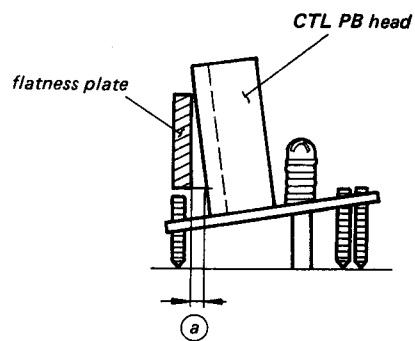
Adjustment procedure:

- Adjust the adjusting screw (a) meets the required specification (2).
- Adjust the adjusting screw (b) meets the required specification (3).
- Turn three adjusting screws of exactly equal amount in clockwise or counterclockwise direction so that the relationship between tape and head meets the required specification (1).





Spec.:
(Zenith)
a ≤ 0.1 mm



TAPE RUN

7-7-3. Audio Head Height Adjustment

Tool and equipment:

Alignment tape, RR5-2SA-PAL
VTVM or oscilloscope

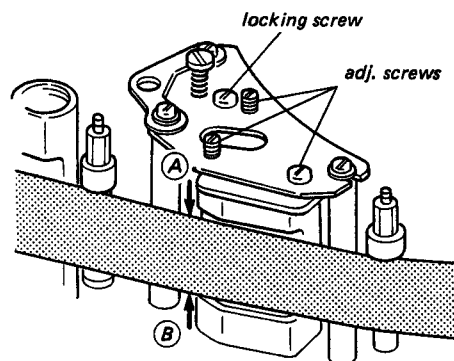
- Preparation:**
- (1) Connect the VTVM or oscilloscope to AUDIO OUT CH-1 and CH-2 terminals.
 - (2) Playback the audio 1 kHz segment of the alignment tape.

Check procedure:

- (1) Check that the CH-1 output level increase is less than 0.5 dB when pressing down at (A).
If not, perform the steps (1) and (2) of the adjustment procedure.
- (2) Check that the CH-2 output level increase is less than 0.5 dB when pushing up at (B).
If not, perform the steps (3) and (4) of the adjustment procedure.

Adjustment procedure:

- (1) Loosen the locking screw and turn adjusting screws (R) and (A) of exactly equal amount in counter-clockwise direction and turn adjusting screw (C) of exactly equal amount in clockwise direction.
- (2) Tighten the locking screw and check height again.
- (3) Loosen the locking screw and turn adjusting screws (R) and (A) of exactly equal amount in clockwise direction and turn the screw (C) of exactly equal amount in counter-clockwise direction.
- (4) Tighten the locking screw and check height again.



Spec.:

- CH-1 level increase is less than 0.5 dB when pressing down at (A) portion.
- CH-2 level increase is less than 0.5 dB when pushing up (B) portion.

7-7-4. Audio Head Zenith Adjustment

Tool and equipment:

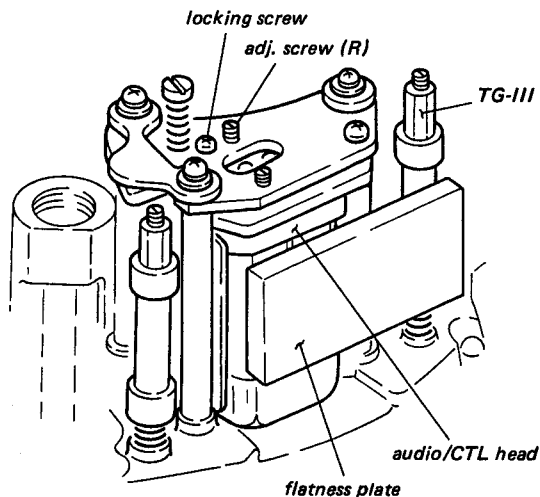
Flatness plate

Check procedure:

Check that the clearance between the audio head and the flatness plate meets the required specification, when the flatness plate is set on the audio head and TG-III.

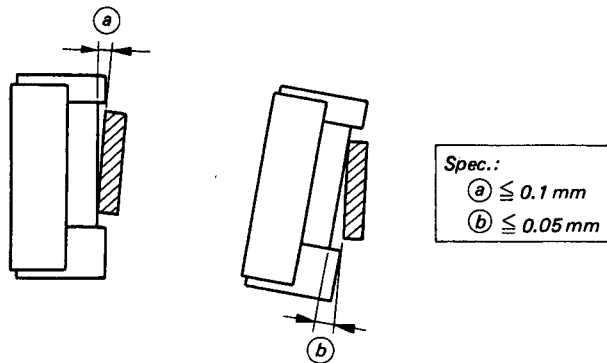
Adjustment procedure:

- When the clearance is out of spec. at the top portion of the audio head.
- (1) Turn the adjusting screw (R) in counterclockwise direction.
 - (2) Tighten the locking screw and check zenith again.



When the clearance is out of spec. at the bottom portion of the audio head.

- (3) Loosen the locking screw $\frac{1}{4} \sim \frac{1}{2}$ turns.
- (4) Turn the adjusting screw (R) in clockwise direction.
- (5) Tighten the locking screw and check zenith again.



7-7-5. Audio Head Azimuth Adjustment

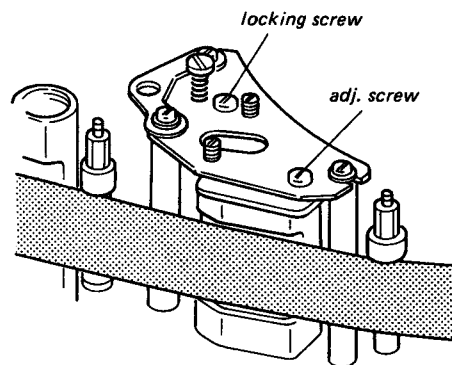
Tool and equipment:

Alignment tape, RR5-2SA-PAL
 VTVM or oscilloscope

- Preparation:**
- (1) Connect the VTVM or oscilloscope to AUDIO OUT CH-1 or CH-2 terminal.
 - (2) Playback the audio 10 kHz portion of the alignment tape.

Adjustment procedure:

- (1) Loosen the locking screw and adjust the maximum output level by turning the adjusting screw.
- (2) Tighten the locking screw.



TAPE RUN

7-7-6. Audio Head Phase Adjustment

Tool and equipment:

Alignment tape, RR5-2SA-PAL
Oscilloscope

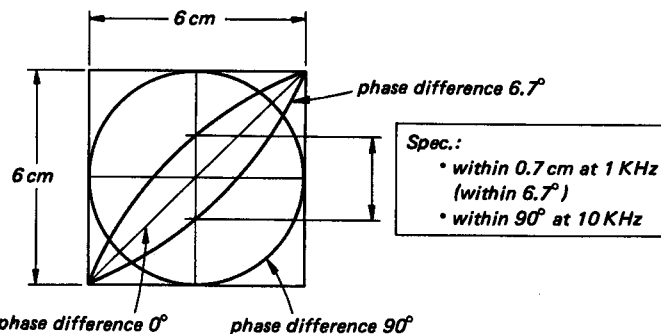
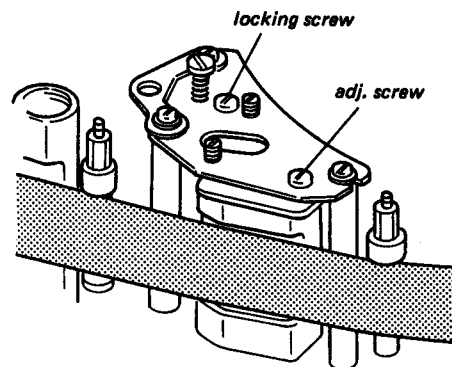
- Preparation:**
- (1) Connect the horizontal and vertical terminals of the oscilloscope to AUDIO OUT CH-1 and CH-2 terminals.
 - (2) Playback the audio 1 kHz portion of the alignment tape.
 - (3) Adjust the scope for horizontal and vertical amplitudes of 6 cm of a lissajous waveshape.

Check procedure:

Check that the vertical amplitude at the center in the horizontal direction is within the specification at 1 kHz and 10 kHz.

Adjustment procedure:

- (1) Loosen the locking screw $\frac{1}{4} \sim \frac{1}{2}$ turns and adjust the phase by turning the adjusting screw.
- (2) Tighten the locking screw and confirm phase again.



7-7-7. Audio/CTL Head Position Adjustment

VP-5030 has two types of video head track width.

The label of upper drum ass'y (type of upper drum ass'y)	Track width
RV-5 (RP) (A-6709-136-A)	85μm
DUR-23-R (A-6709-400-A)	105μm

The recorded video track width on the alignment tape is 85μm. Therefore this CTL head position adjustment of VP-5030 has two ways.

Be sure to perform this adjustment.

Tool and equipment:

Alignment tape, RR5-2SA-PAL
Oscilloscope

- For 85μm video head track width.

- Preparation:**
- (1) Connect the oscilloscope to TP29/VP-13 board, and EXT.TRIG. from TP21/VP-13 board.
 - (2) Playback the color-bar segment of the alignment tape.

Check procedure:

- (1) Check that the RF envelope has the maximum amplitude when the TRACKING control is set in the detent position.

Adjustment procedure:

- (1) Adjust the position of the audio/CTL head.

- For 105 μ m video head track width.

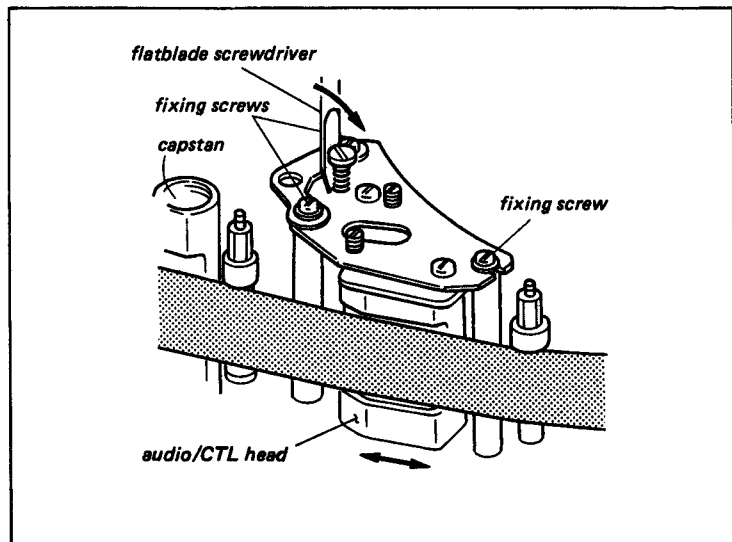
Preparation: (1) Connect the oscilloscope to TP29/VP-13 board, TP2/SV-31A board, EXT.TRIG. from TP21/VP-13 board.
(2) Playback the color bar segment of the alignment tape.

Check procedure:

- (1) Set the TRACKING control to its center click (detent) position.
- (2) Turn the TRACKING control in counterclockwise direction until the waveform at TP29/VP-13 board is just before starting to decrease from the maximum amplitude, check that the waveform at TP21/SV-44C advances 1.2 ± 0.3 msec. from the step (1) position.
- (3) Turn the TRACKING control in clockwise direction until the waveform at TP29/VP-13 board is just before starting to decrease from the maximum amplitude, check that the waveform at TP21/SV-44C is delayed. 1.2 ± 0.3 msec. from the step (1) position.

Adjustment procedure:

- (1) Turn the TRACKING control in counterclockwise direction until the waveform at TP29/VP-13 advance 1.2 msec. from the step (1) position of check procedure.
- (2) Loosen the three fixing screws.
- (3) Move the CTL head block toward the capstan shaft as far as it will go, and install the flatblade screwdriver as shown in figure. Move the screwdriver in the arrow direction. Stop the movement of the screwdriver when the RF envelope waveform just turn into the maximum amplitude.
- (4) Check the CTL head position meets the specifications according to steps (2) and (3) of check procedure.
- (5) Tighten the fixing screws of the CTL head block.
- (6) Check again that the CTL head position meets the specifications.



7-8. VIDEO HEAD DIHEDRAL ADJUSTMENT

Tool and equipment:

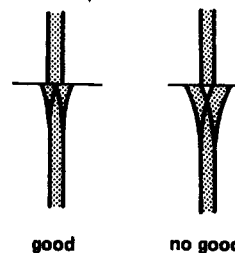
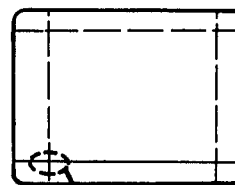
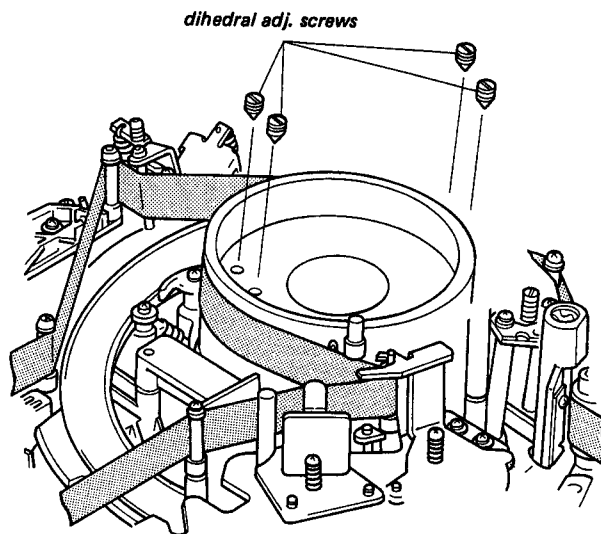
Dihedral adjusting screw
Alignment tape, RR5-2SA-PAL
Video monitor

Check procedure:

Check that the vertical line beneath the switching point. If the vertical line does not split into two lines, no adjustment is necessary.

Adjustment procedure:

- (1) Screw lightly four dihedral adjusting screws into the upper drum.
- (2) Turn either of the two screws adjacent to the video head with white leads until some resistance is felt.
- (3) If this screw is turned further, the video head is moved and the dihedral is adjusted.
Therefore, turn this screw an additional quarter turn.
- (4) Check for dihedral distortion. If the distortion has gotten worse, turn this screw back one turn and tighten the other screw a quarter turn. Check again for dihedral distortion and continue in this way until dihedral error is eliminated.
- (5) When the adjustment is completed, remove the four dihedral adjusting screws. After removal, playback the alignment tape and check dihedral again as error sometimes reappears after screws are removed.



good

no good

SECTION 8

POWER SUPPLY AND SYSTEM CONTROL ALIGNMENT

8-1. REG +12V ADJUSTMENT(SWITCHING REGULATOR)

.More than 5 minutes should be elapsed after POWER ON.
.Any mode.

Check point; CN201-1/UR-02

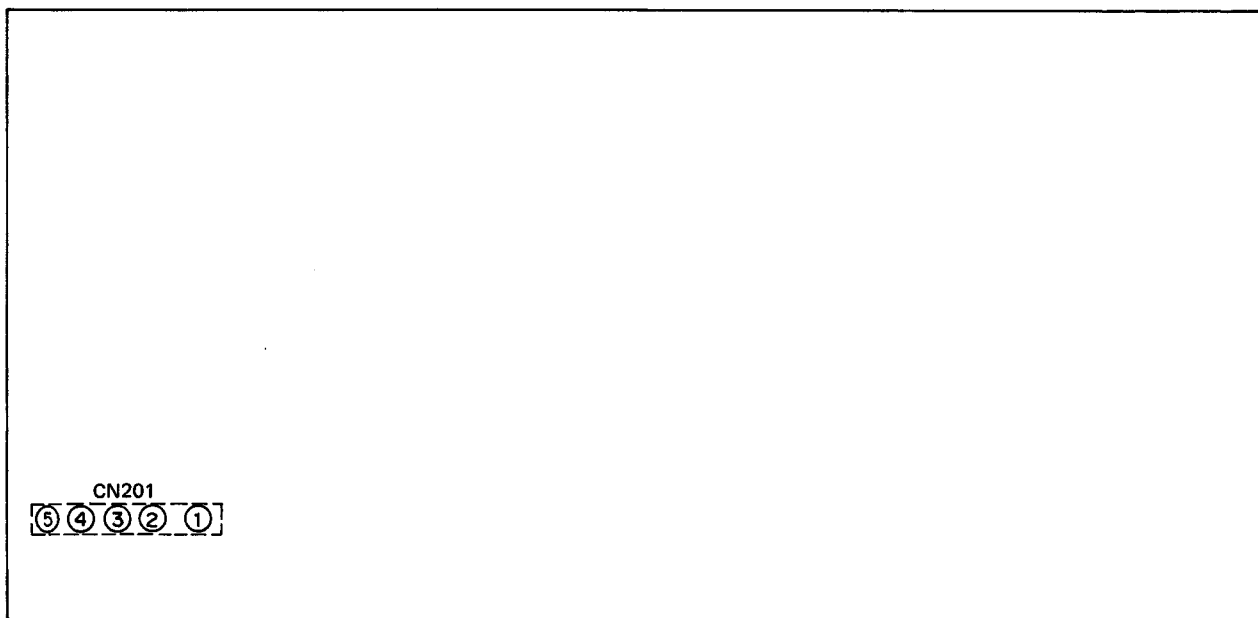
Spec: $12.0V \pm 0.1V_{dc}$

Adj: RV301/C(UR-02)

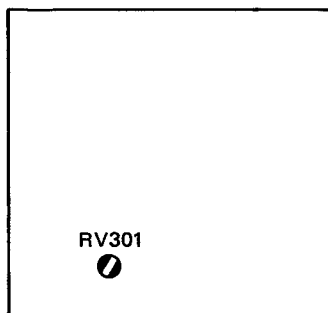
NOTE: If the REG 12V adjustment is attempted, re-alignment of the video system and servo system are required.

Do not attempt adjustment to REG 12V power supply unless machine performance is obviously poor due to incorrect power supply voltage.

If adjustments are made to the power supply, re-alignment of the video and servo systems are necessary.



M Board



C Board

POWER AND SYSTEM

8-2. REG +9V ADJUSTMENT

.POWER ON.
.STOP mode.

Check point: TP1/DC-13B

Spec: $9.0V \pm 0.1V_{dc}$

Adj: RV1/DC-13B

8-3. DIGITAL VCC +5V ADJUSTMENT FOR SERVO

.FWD mode.

Check point: TP32/SV-44C

Spec: $5.0V \pm 0.1V_{dc}$

Adj: RV16/SV-44C

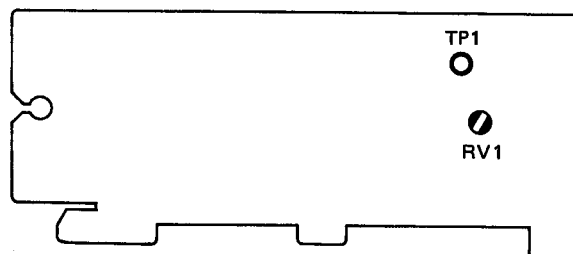
8-4. TAPE SENSOR BALANCE ADJUSTMENT

.STOP mode.

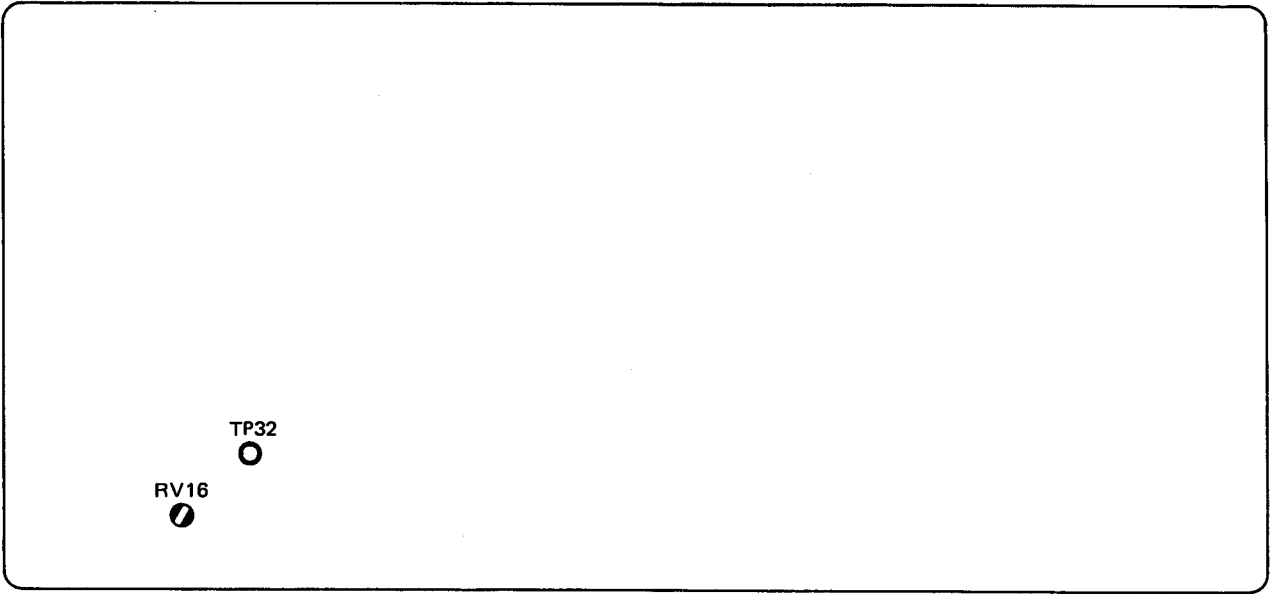
Check point: TP4/SY-75A

Spec: $6.0V \pm 0.2V_{dc}$

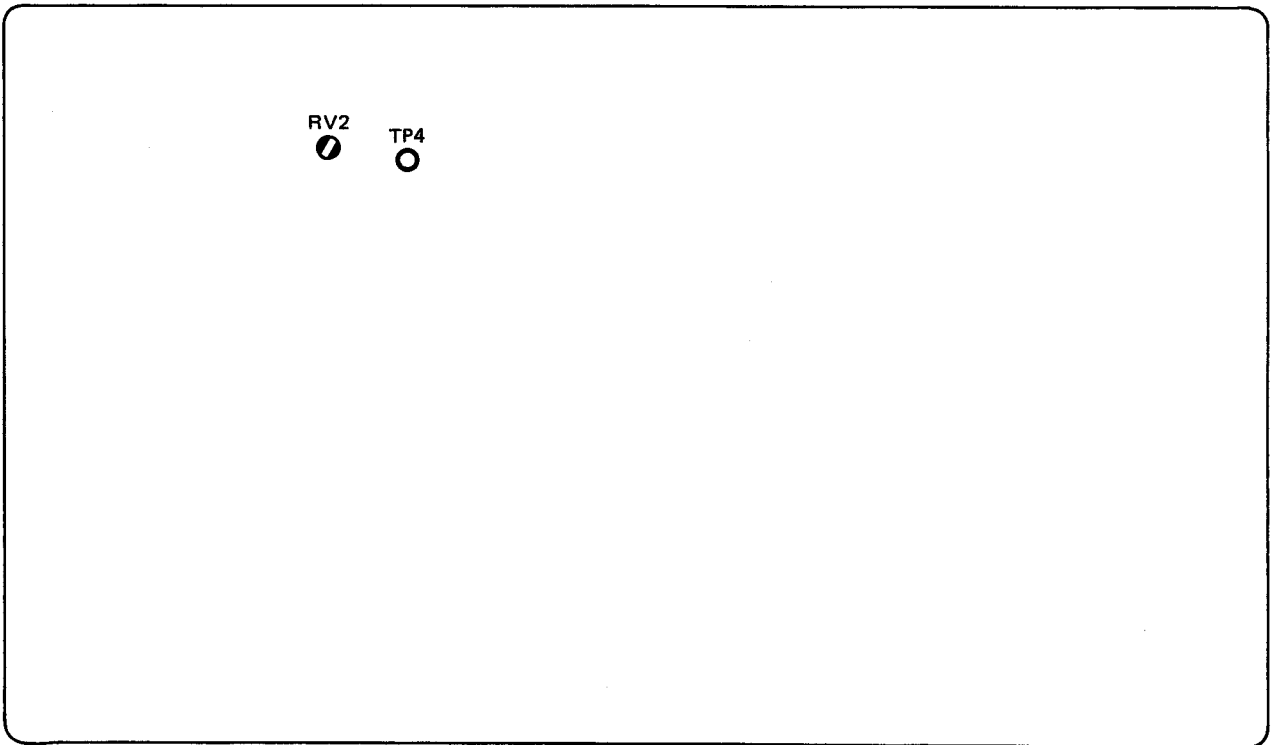
Adj: RV2/SY-75A



DC-13B Board



SV-44C Board



SY-75A Board

SECTION 9
SERVO SYSTEM ALIGNMENT

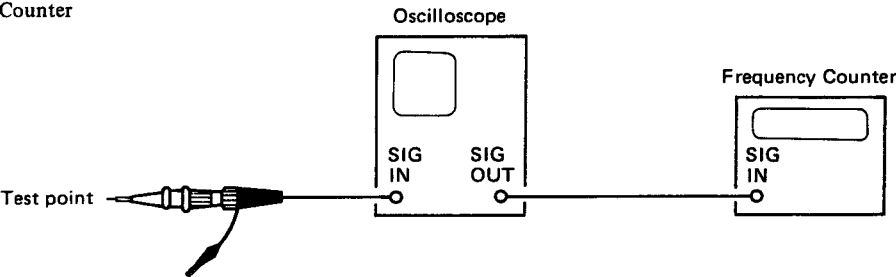
[Equipment Required]

- Alignment Tape; RR5-2SA-PAL (Part No.: 8-960-015-63) or RR5-1SC-PAL (Part No.: 8-960-035-61) and RR5-2SA (Part No.: 8-960-015-03)

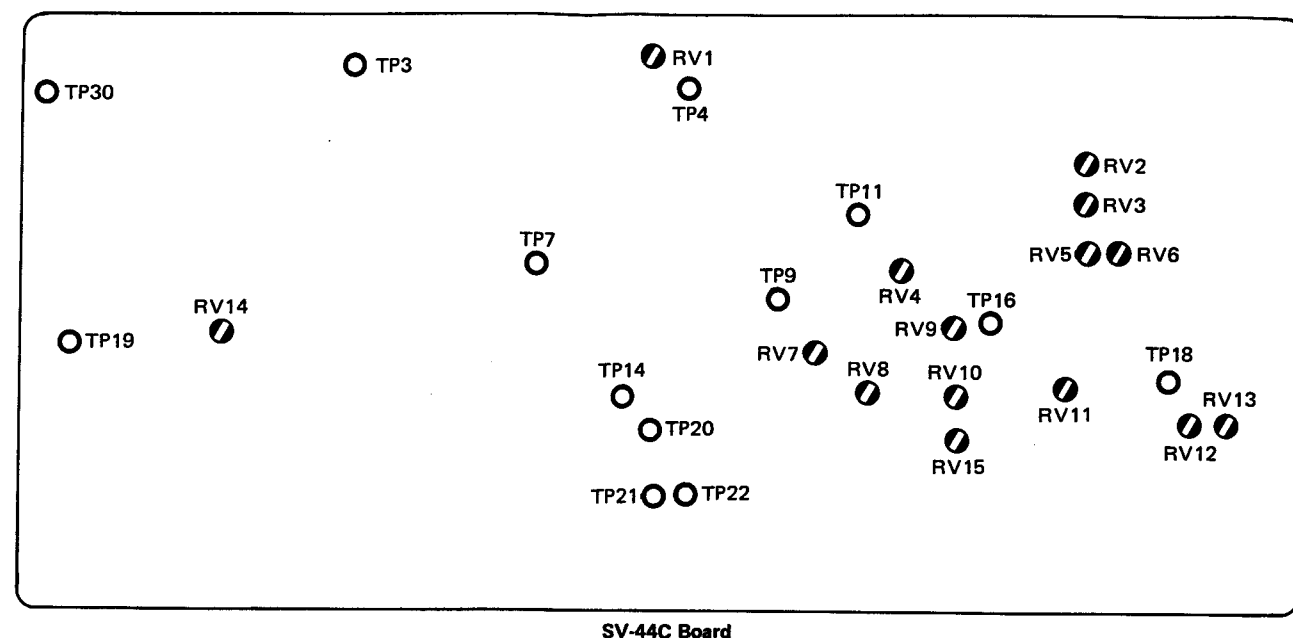
RR5-2SA-PAL

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 KHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	_____
09:00 – 14:00	208 – 300	R-F sweep	_____
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 KHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 KHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	_____

- Dual Trace Oscilloscope
- Frequency Counter



SERVO



9-1. AUDIO/CTL HEAD POSITION ADJUSTMENT

.Refer to Sec. 7-7-7.

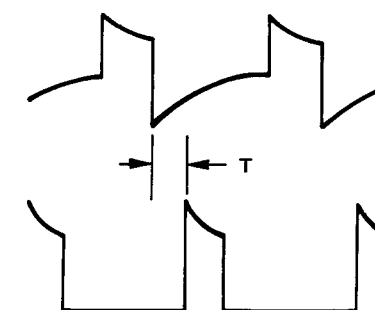
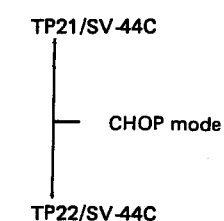
9-2. TRACKING MULTI ADJUSTMENT(CCIR)

.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
 .Set the TRACKING control to its center detent.
 .SYSTEM SELECT sw;PAL

Check point; TP21 and TP22/SV-44C

Trig; TP22/SV-44C

Spec;



$$T = 0 \pm 100\mu s$$

Adj; RV15/SV-44C

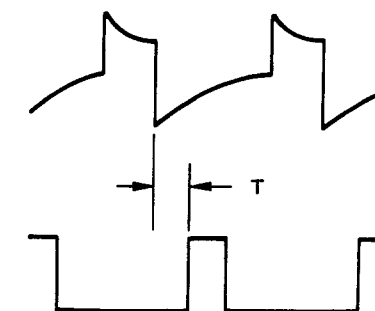
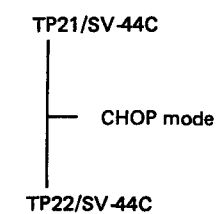
9-3. TRACKING MULTI ADJUSTMENT(EIA)

.Playing back the color bar segment of Alignment Tape RR5-2SA.
 .Set the TRACKING control to its center detent.
 .SYSTEM SELECT sw;NTSC

Check point; TP21 and TP22/SV-44C

Trig; TP22/SV-44C

Spec;



$$T = 0 \pm 100\mu s$$

Adj; RV10/SV-44C

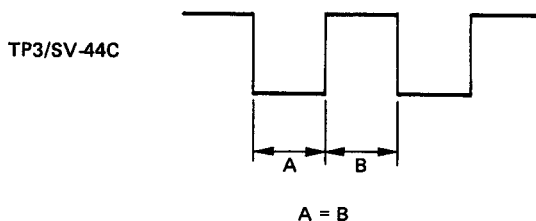
9-4. CAPSTAN FREE SPEED ADJUSTMENT(CCIR)

.Playing back the Alignment Tape RR5-2SA PAL.
.Short between TP28 and E3 on SV-44C board with jumper lead.
.SYSTEM SELECT sw;PAL

Check point; TP3/SV-44C

Trig; TP3/SV-44C

Spec;



Adj; RV5/SV-44C

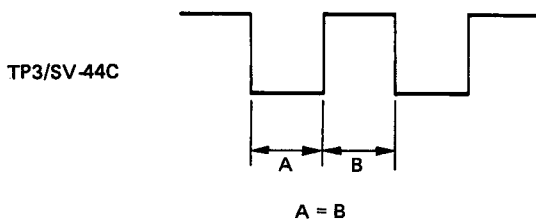
9-5. CAPSTAN FREE SPEED ADJUSTMENT(EIA)

.Playing back the Alignment Tape RR5-2SA.
.Short between TP28 and E3 on SV-44C board with jumper lead.
.SYSTEM SELECT sw;NTSC

Check point; TP3/SV-44C

Trig; TP3/SV-44C

Spec;



Adj; RV6/SV-44C

SERVO

9-6. CAPSTAN STOP SERVO ADJUSTMENT

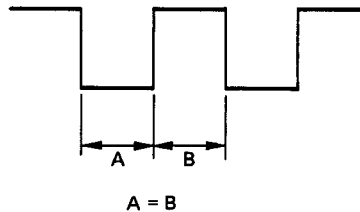
.STOP mode.

Check point; TP16/SV-44C(STOP SERVO-1)
TP18/SV-44C(STOP SERVO-2)

Trig; TP22/SV-44C

Spec;

TP16/SV-44C
TP18/SV-44C



Adj; RV13/SV-44C(STOP SERVO-1)
RV12/SV-44C(STOP SERVO-2)

9-7. CAPSTAN SEARCH $\times 1/5$ SPEED ADJUSTMENT

.Playing back the blank tape.

.FWD PAUSE mode

.Short between TP30 and E3 on SV-44C board with jumper lead.

Check point; TP19/SV-44C

Spec; 36Hz^{+8Hz}
-6Hz

Adj; RV11/SV-44C

9-8. CAPSTAN FWD/REV DETECTOR ADJUSTMENT

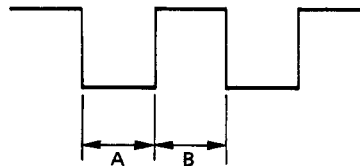
.Playing back the Alignment Tape RR5-2SA PAL.
.Set the TRACKING control to its center detent.
.SYSTEM SELECT sw;PAL

Check point; TP19/SV-44C

Trig; TP19/SV-44C

Spec;

TP19/SV-44C



$A = B$

Adj; RV14/SV-44C

9-9. DRUM AFC BIAS ADJUSTMENT(CCIR)

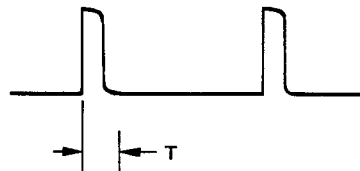
.Playing back the Alignment Tape RR5-2SA PAL.
.FWD and FWD PAUSE modes.
.Set the TRACKING control to its center detent.
.SYSTEM SELECT sw;PAL

Check point; TP7/SV-44C

Trig; TP7/SV-44C

Spec;

TP7/SV-44C
(FWD mode)



TP7/SV-44C
(FWD PAUSE mode)



$T = 0 \pm 0.1\mu s$

Adj; RV4/SV-44C

SERVO

9-10. DRUM AFC BIAS ADJUSTMENT(EIA)

- .Playing back the Alignment Tape RR5-2SA.
- .FWD and FWD PAUSE modes.
- .Set the TRACKING control to its center detent.
- .SYSTEM SELECT sw;NTSC

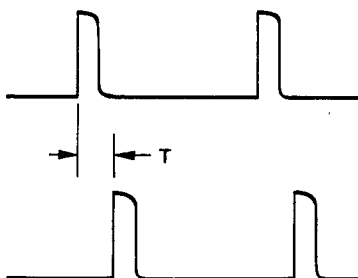
Check point; TP7/SV-44C

Trig; TP7/SV-44C

Spec;

TP7/SV-44C
(FWD mode)

TP7/SV-44C
(FWD PAUSE mode)



$$T = 0 \pm 0.1 \mu s$$

Adj; RV9/SV-44C

9-11. DRUM AFC TRANSIENT ADJUSTMENT

- .Playing back the Alignment Tape RR5-2SA PAL.
- .FWD and FWD PAUSE mode.
- .Set the TRACKING control to its center detent.
- .SYSTEM SELECT sw;PAL

Check point; TP11/SV-44C

Spec; FWD PAUSE mode=3.5Vdc(REF)
FWD mode=3.5V $\pm$ 0.1Vdc

Adj; RV7/SV-44C

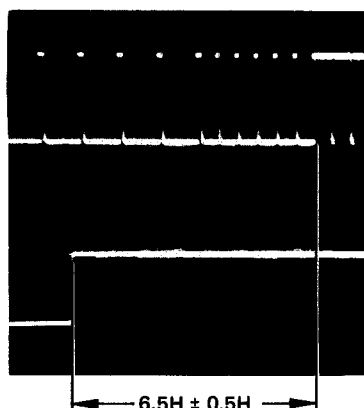
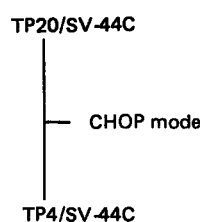
9-12. DRUM LOCK PHASE ADJUSTMENT(CCIR)

.EXT SYNC IN;CCIR Video signal.
.Short between TP14 and E3,
TP28 and E3 on SV-44C board with jumper lead.
.FWD mode.
.SYSTEM SELECT sw;PAL

Check point; TP20 and TP4/SV-44C

Trig; TP22/SV-44C

Spec;



Adj; RV2/SV-44C

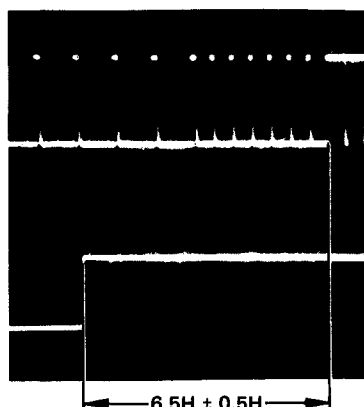
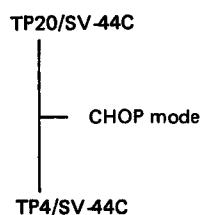
9-13. DRUM LOCK PHASE ADJUSTMENT(EIA)

.EXT SYNC IN;NTSC Video signal.
.Short between TP14 and E3,
TP28 and E3 on SV-44C board with jumper lead.
.FWD mode.
.SYSTEM SELECT sw;NTSC

Check point; TP20 and TP4/SV-44C

Trig; TP22/SV-44C

Spec;



Adj; RV3/SV-44C

9-14-1. SWITCHING POSITION ADJUSTMENT(CCIR)

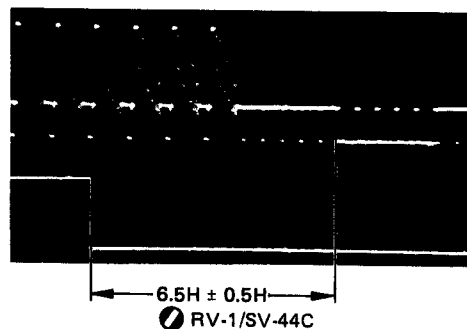
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
 .Short between TP7,TP14 and E3 on SV-44C board with jumper leads.
 .Set the TRACKING control to its center detent.
 .SYSTEM SELECT sw;PAL

Check point; TP4/SV-44C and TP17/VP-13

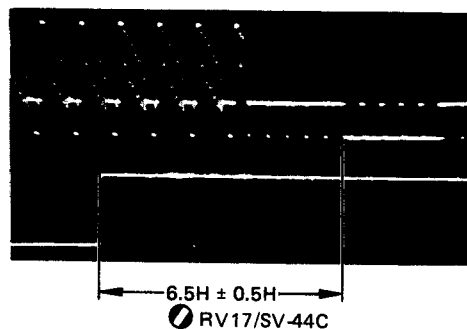
Trig; TP22/SV-44C

Spec;

TP17/VP-13
 1st Field — CHOP mode
 TP4/SV-44C



TP17/VP-13
 2nd Field — CHOP mode
 TP4/SV-44C



Adj; RV1/SV-44C(1st Field)
 RV17/SV-44C(2nd Field)

SERVO

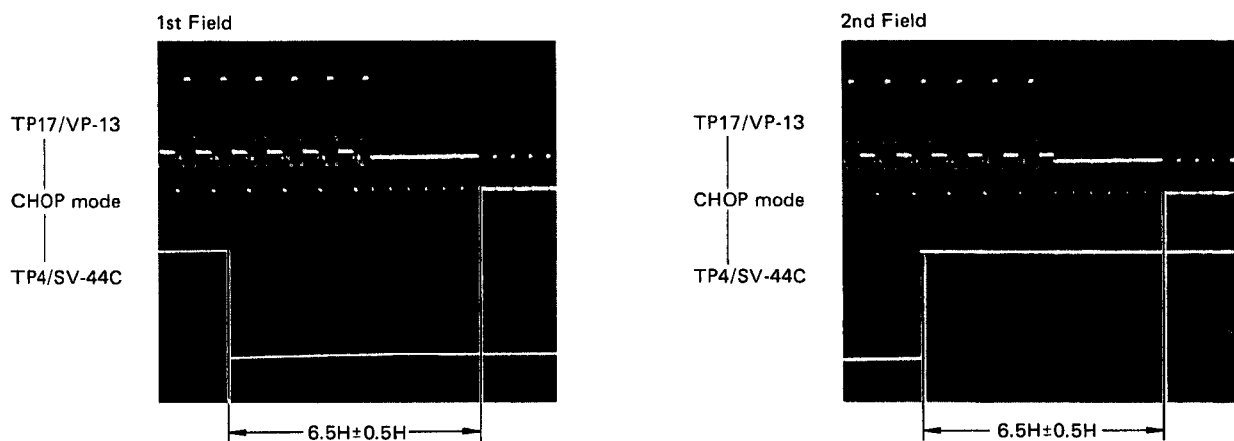
9-14-2. SWITCHING POSITION ADJUSTMENT(EIA)

- .Playing back the color bar segment of the Alignment Tape RR5-2SA.
- .Short between TP7,TP14 and E3 on SV-44C board with jumper leads.
- .Set the TRACKING control to its center detent.
- .SYSTEM SELECT sw;NTSC

Check point; TP4/SV-44C and TP17/VP-13

Trig; TP22/SV-44C

Spec;



Adj; RV1/SV-44C(1st Field)
RV8/SV-44C(2nd Field)

9-15. REEL SERVO ADJUSTMENT

9-15-1. Still Speed Adjustment

.FWD PAUSE mode

Check point; CN6-1 and CN6-3/MR-8A or MR-11B

Spec; $0.4V \pm 0.02V_{dc}$

Adj; RV3/MR-8A or MR-11B

SERVO

NOTE;FWD torque Alignment(RV1/MR-8A or MR-11B) and REV torque Alignment(RV2/MR-8A or MR-11B) Refer to Mechanical Alignment sec.6-3 and 6-4.

SECTION 10

AUDIO SYSTEM ALIGNMENT

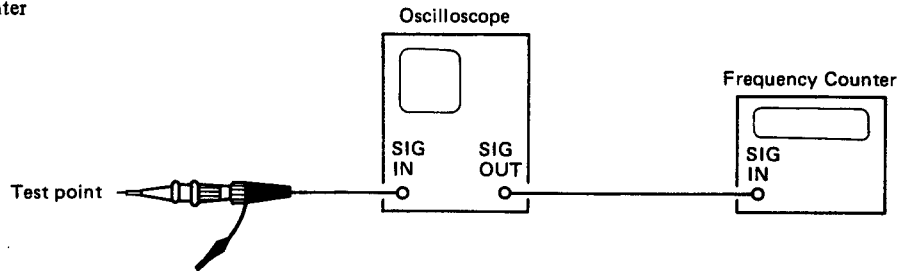
[Equipment Required]

- Alignment Tape; RR5-2SA-PAL (Part No.: 8-960-015-63) or
RR5-1SC-PAL (Part No.: 8-960-035-01)

RR5-2SA-PAL

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 KHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	_____
09:00 – 14:00	208 – 300	R-F sweep	_____
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 KHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 KHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	_____

- Blank Tape;
- Oscilloscope
- Frequency Counter



10-1. PB OUTPUT FREQUENCY RESPONSE ADJUSTMENT

.Playing back the 1kHz and 10kHz segments of Alignment Tape.

Check Point; AUDIO LINE OUT(Terminated by 47kohm)

Spec; (1kHz Level=REF Level)
10kHz Level=(REF Level)-10dB+0.5dB

Adj; RV101/AP-7(CH-1)
RV201/AP-7(CH-2)

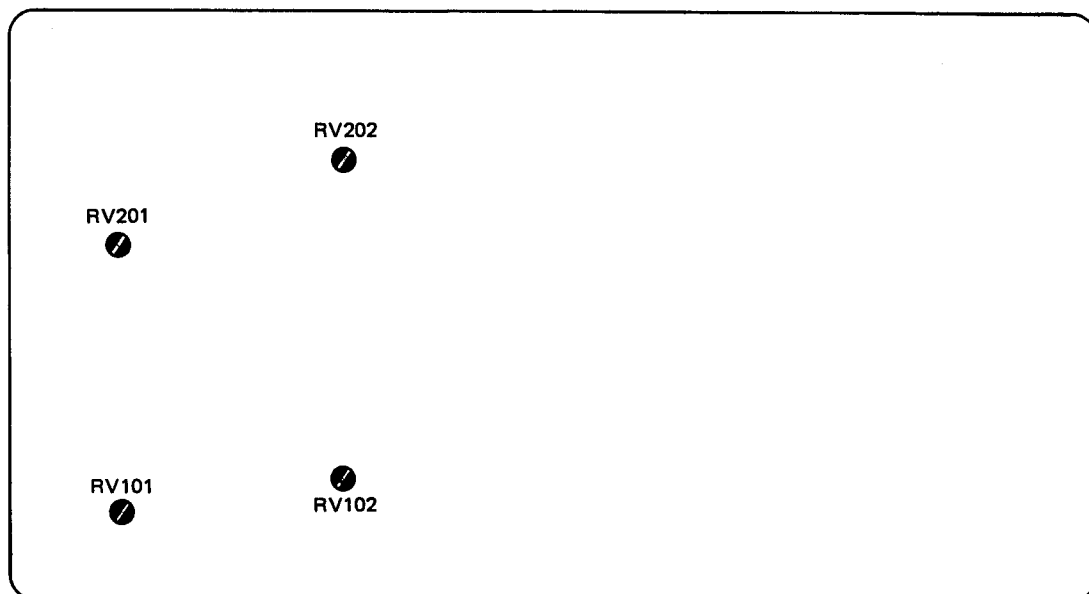
10-2. PB OUTPUT LEVEL ADJUSTMENT

.Playing back the 10kHz segments of Alignment Tape.

Check point; AUDIO LINE OUT (Terminated by 47kohm)

Spec; -5dB+0.5dB(CH-1=CH-2)

Adj; RV102/AP-7(CH-1)
RV202/AP-7(CH-2)



AP-7 Board

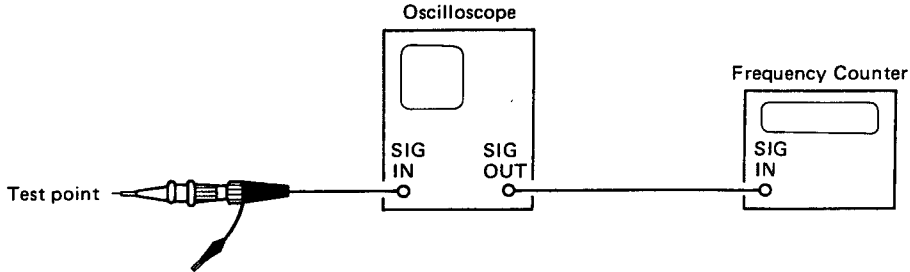
SECTION 11
VIDEO SYSTEM ALIGNMENT

[Equipment Required]

- Dual Trace Oscilloscope
- Frequency Counter
- Video Sweep Generator (with Burst)
- Alignment Tape; RR5-2SA-PAL (Part No.: 8-960-015-63) or RR5-1S-PAL (Part No.: 8-960-015-61)

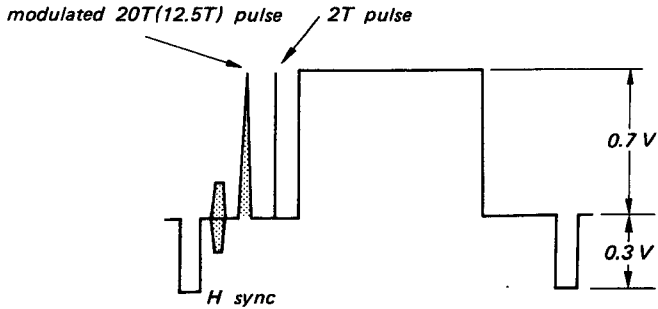
RR5-2SA-PAL

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 KHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	_____
09:00 – 14:00	208 – 300	R-F sweep	_____
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 KHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 KHz, -10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	_____

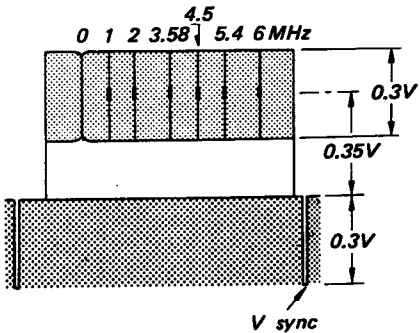


[Video Signals Required]

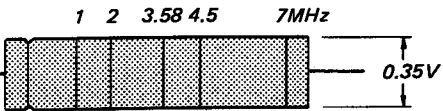
- Sin² wave signal;



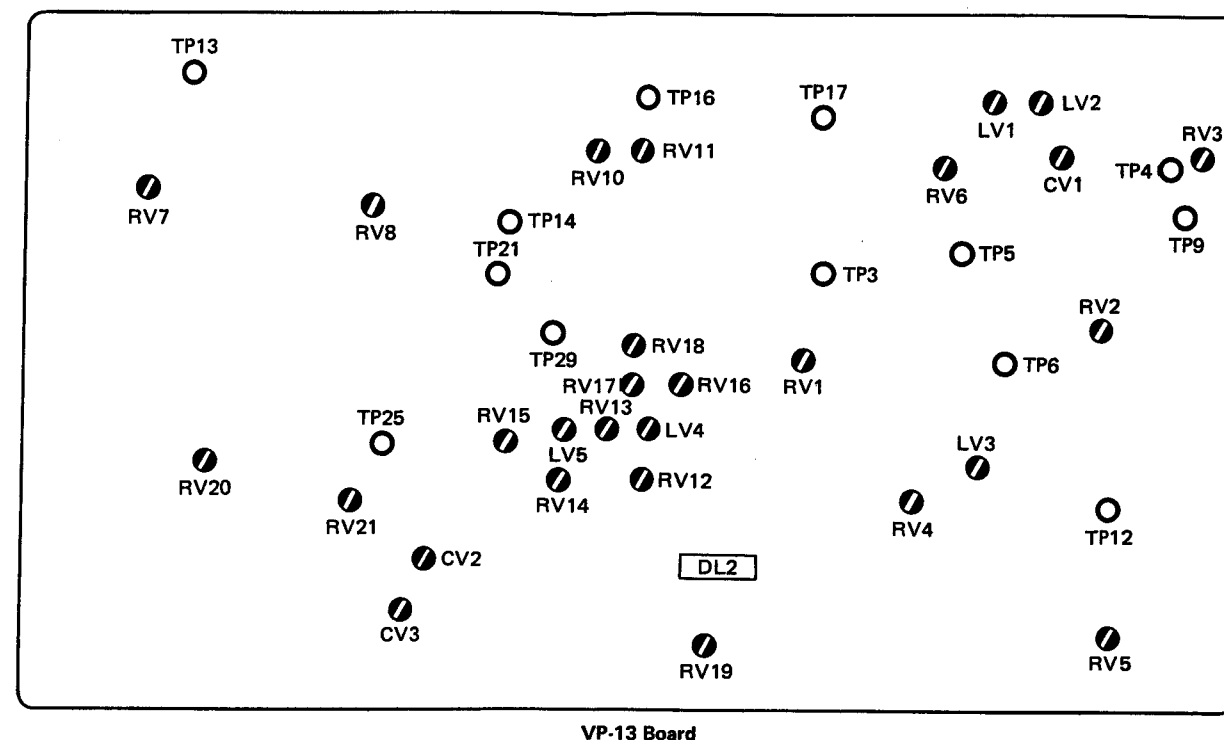
- Gated Sweep Signal;



- Sweep Signal;



VIDEO



11-1. PLAYBACK RF AMPLIFIER ADJUSTMENT

11-1-1. PB RF Frequency Response Adjustment

.Playing back the RF sweep segment of Alignment Tape RR5-2SA PAL.
 .Short between TP7 and E2 on SV-44C board with jumper lead.
 .Set the TRACKING control to its center detent.
 .SYSTEM SELECT sw;PAL/SECAM

(1) 6.0MHz Tuning Adjustment

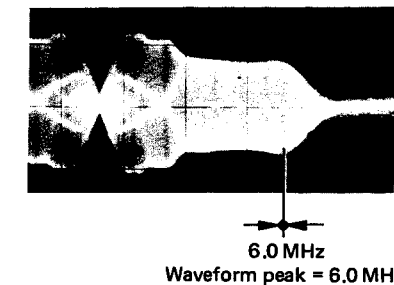
.RV12(CH-A)and RV14(CH-B)/VP-13; Fully clockwise.
 .RV13(CH-A)and RV15(CH-B)/VP-13; Fully counterclockwise.

Check point; TP29/VP-13

Trig; TP21/VP-13

Spec;

TP29/VP-13



Adj; CV2/VP-13(CH-A)
 CV3/VP-13(CH-B)

(2) 4.5MHz Tuning Adjustment

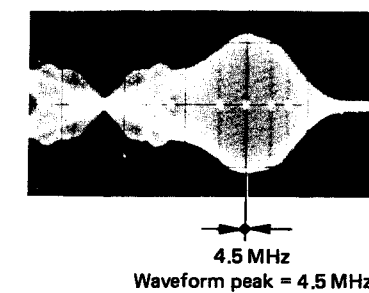
.RV12(CH-A)and RV14(CH-B)/VP-13; Fully clockwise.
 .RV13(CH-A)and RV15(CH-B)/VP-13; Fully counterclockwise.

Check point; TP29/VP-13

Trig; TP21/VP-13

Spec;

TP29/VP-13



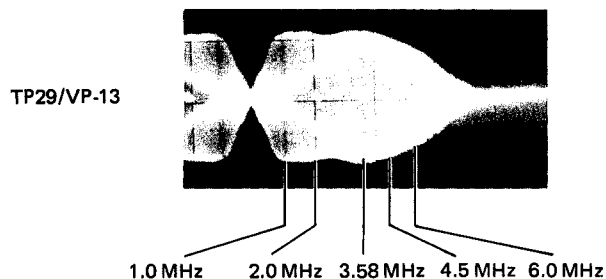
Adj; LV4/VP-13(CH-A)
 LV5/VP-13(CH-B)

(3)Frequency Response Adjustment

Check point; TP29/VP-13

Trig; TP21/VP-13

Spec;



2.0MHz	3.58MHz	4.5MHz	6.0MHz
100% REF.	100% +10%	90% +10%	50% +15%

Adj; RV12/RV13(CH-A)/VP-13
RV14/RV15(CH-B)/VP-13

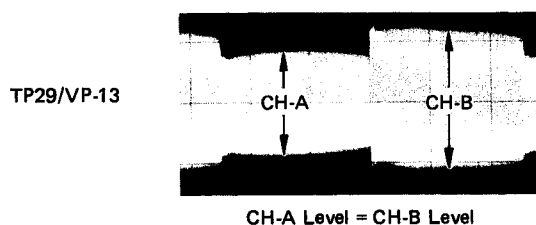
11-1-2. PB Y-RF Output Balance Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.Set the TRACKING control to its center detent.
.SYSTEM SELECT sw;PAL/SECAM

Check point; TP29/VP-13

Trig; TP21/VP-13

Spec;



Adj; RV17/VP-13

11-1-3. PB Y-RF Output Level Adjustment

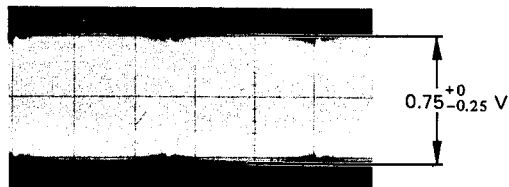
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.Set the TRACKING control to its center detent.
.SYSTEM SELECT sw;PAL/SECAM

Check point; TP29/VP-13

Trig; TP21/VP-13

Spec;

TP29/VP-13



Adj; RV18/VP-13

11-1-4. PB Chroma-RF Output Balance Adjustment

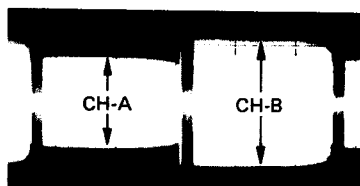
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.Set the TRACKING control to its center detent.
.SYSTEM SELECT sw;PAL

Check point; TP9/VP-13

Trig; TP21/VP-13

Spec;

TP9/VP-13



CH-A Level = CH-B Level

Adj; RV16/VP-13

VIDEO

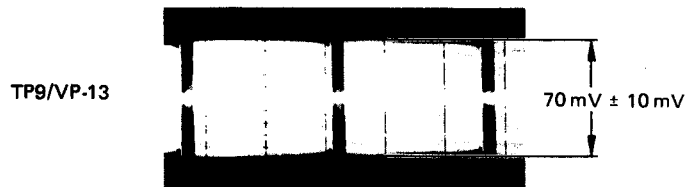
11-1-5. PB Chroma-RF Output Level Adjustment

- .Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
- .Set the TRACKING control to its center detent.
- .SYSTEM SELECT sw;PAL

Check point; TP9/VP-13

Trig; TP21/VP-13

Spec;



Adj; RV19/VP-13

NOTE; Do not use the Alignment Tape, RR4-7SA SECAM/RR4-7S SECAM.

11-2. Y AMPLIFIER ADJUSTMENT

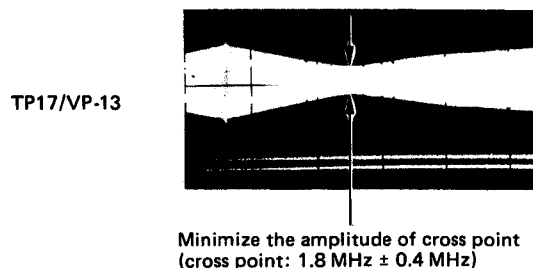
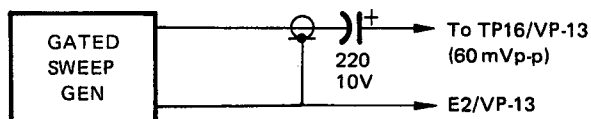
11-2-1. Noise Canceller Adjustment

- .Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
- .Temporarily connect the capacitor (220/10V) between TP15 and E2 on VP-13 Board.
- .Temporarily connect the GATED sweep (output 60mVp-p).
- .SYSTEM SELECT sw;PAL/SECAM

Check point; TP17/VP-13

Trig; TP20/SV-44C

Spec;



Adj; RV10/VP-13

11-2-2. Drop-Out Sensitivity Level Adjustment

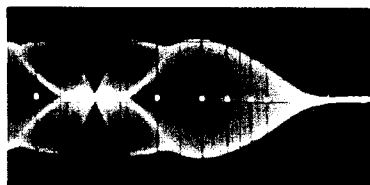
.Playing back the RF sweep segment of Alignment Tape RR5-2SA PAL.
 .SYSTEM SELECT sw;PAL/SECAM

Check point; TP29/VP-13 and TP25/VP-13

Trig; TP21/VP-13

Spec;

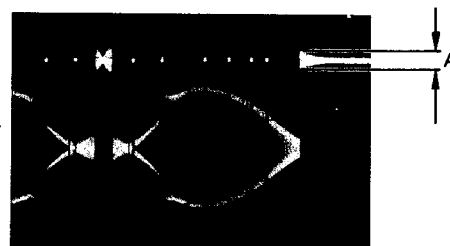
TP29/VP-13



TP25/VP-13



ADD mode



$A = 0.07 \text{ V} \sim 0.1 \text{ V}$

Adj; RV21/VP-13

11-2-3. RF-Noise Band Adjustment

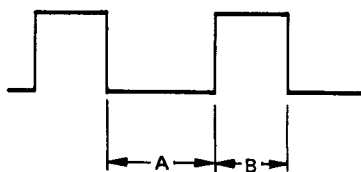
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
 .REV SEARCH mode.
 .Preset the RV20/VP-13; Fully counterclockwise.
 .SYSTEM SELECT sw;PAL

Check point; IC8-7/VP-13

Trig; IC8-7/VP-13

Spec;

IC8-7/VP-13



$$\frac{B}{A} \div \frac{2}{3}$$

Adj; RV20/VP-13

11-2-4. Carrier Balance Adjustment

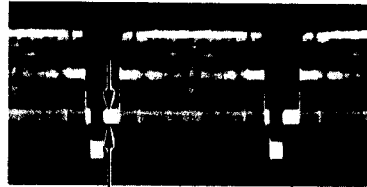
.Playing back the Monoscope segment of Alignment Tape RR5-2SA PAL.
.SYSTEM SELECT sw;PAL/SECAM

Check point; TP13/VP-13

Trig; TP3/VP-13

Spec;

TP13/VP-13



Minimize this amplitude
(carrier leak)

Adj; RV8/VP-13

11-2-5. Y Output Level Adjustment

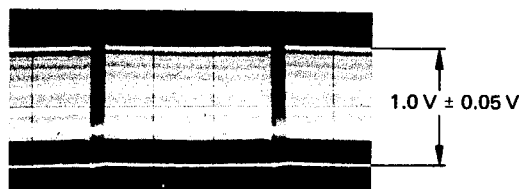
.Playing back the Color bar segment of Alignment Tape RR5-2SA PAL.
.VIDEO LINE OUT:Terminated by 75 ohm Resistor.
.SYSTEM SELECT sw;PAL

Check point; TP17/VP-13

Trig; TP4/SV-44C

Spec;

TP17/VP-13



Adj; RV11/VP-13

11-2-6. False VD Adjustment

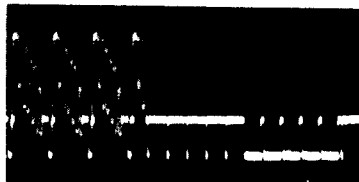
.Playing back the Alignment Tape RR5-2SA PAL.
.PAUSE or SEARCH modes.
.SYSTEM SELECT sw;PAL

Check point; TP17/VP-13

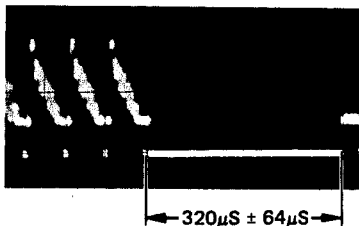
Trig; TP4/SV-44C

Spec;

TP17/VP-13
(FWD mode)



TP17/VP-13
(SEARCH mode)



Adj: RV5/VP-13

11-2-7. PB Y Phase Equalizer Adjustment

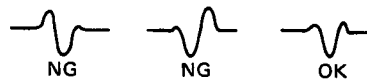
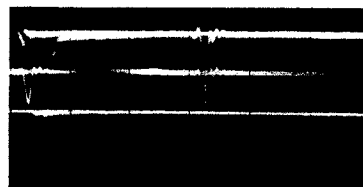
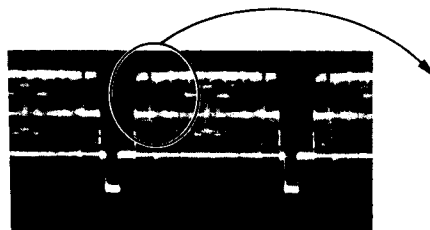
.Playing back the M.S w/burst segment of Alignment Tape RR5-2SA PAL.
.SYSTEM SELECT sw;PAL/SECAM

Check point; TP14/VP-13

Trig; TP3/VP-13

Spec;

TP14/VP-13



Adj; RV7/VP-13

11-3. CHROMA AMPLIFIER ADJUSTMENT

11-3-1. 4.43MHz Reference Oscillator Frequency Adjustment

.STOP mode.

Check point; TP5/VP-13

Spec; 4.433631MHz+5Hz

Adj; CV1/VP-13

11-3-2. APC 5.12MHz Tuning Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.

.SYSTEM SELECT sw;PAL

Check point; TP4/VP-13

Spec; Maximize the amplitude(5.119193MHz+1kHz)

Adj; LV1 and LV2/VP-13

NOTE;This adjustment needs a rough preadjustment of the
"VCO center frequency" appeared herein after.

11-3-3. Chroma Converter Balance Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.

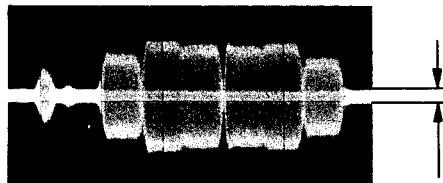
.SYSTEM SELECT sw;PAL

Check point; TP12/VP-13

Trig; TP3/VP-13

Spec;

TP12/VP-13



Minimize this amplitude
(carrier leak)

Adj; RV3/VP-13

VIDEO

11-3-4. ACC Burst Tuning Adjustment

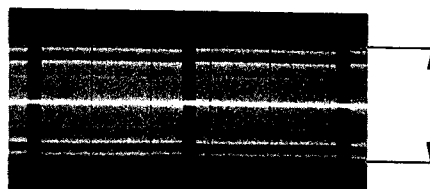
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.SYSTEM SELECT sw;PAL

Check point; TP12/VP-13

Trig; TP22/SV-44C

Spec;

TP12/VP-13



Minimize the Chroma level

Adj; LV3/VP-13

11-3-5. ACC Level Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.

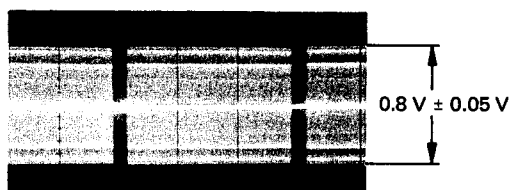
SYSTEM SELECT sw;PAL

Check point; TP12/VP-13

Trig; TP22/SV-44C

Spec;

TP12/VP-13



Adj; RV2/VP-13

11-3-6. VCO center Frequency Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.COLOR LOCK sw;Center detent.
.SYSTEM SELECT sw;PAL

Check point; TP16/VP-13

Spec; $8.1V \pm 0.1V$ dc and normal hue on the monitor screen.

Adj; RV1/VP-13

11-3-7. APC Gain Adjustment

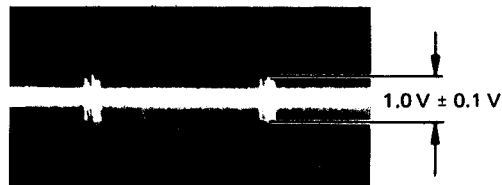
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.Short between TP7 and E2 on VP-13 board with jumper lead.
.SYSTEM SELECT sw;PAL

Check point; TP6/VP-13

Trig; TP21/VP-13

Spec;

TP6/VP-13



Adj; RV4/VP-13

11-3-8. Chroma Mix Level Adjustment

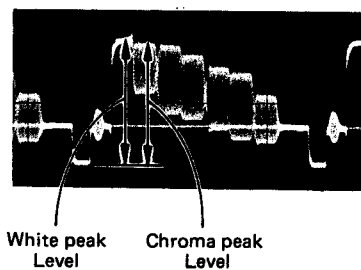
.Playing back the color bar segment of Alignment Tape RR5-2SA PAL.
.VIDEO LINE OUT:Terminated by 75 ohm Resistor.
.SYSTEM SELECT sw;PAL

Check point; TP17/VP-13

Trig; TP3/VP-13

Spec; (white peak level)=(chroma peak level)

TP17/VP-13



Adj; RV6/VP-13

11-4. Y/CHROMA DELAY TIME ADJUSTMENT

.This adjustment is usually not necessary since Y/Chroma delay time variation among multiple recorders and players are negligibly small.

11-4-1. PB Y/C Delay Time Adjustment

.Playing back the MOD.20T pulse segment of Alignment Tape RR5-2SA PAL.

.VIDEO LINE OUT:Terminated by 75 ohm Resistor.

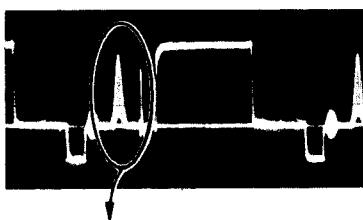
.SYSTEM SELECT sw;PAL

Check point; TP17/VP-13

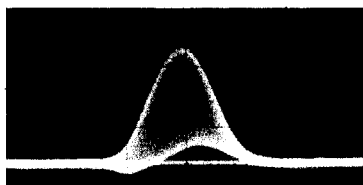
Trig; TP3/VP-13

Spec;

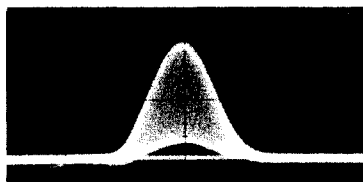
TP17/VP-13



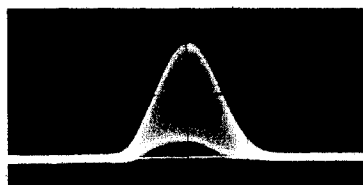
NG
Chroma advances
with respect to Y.



OK



NG
Chroma lags with
respect to Y.



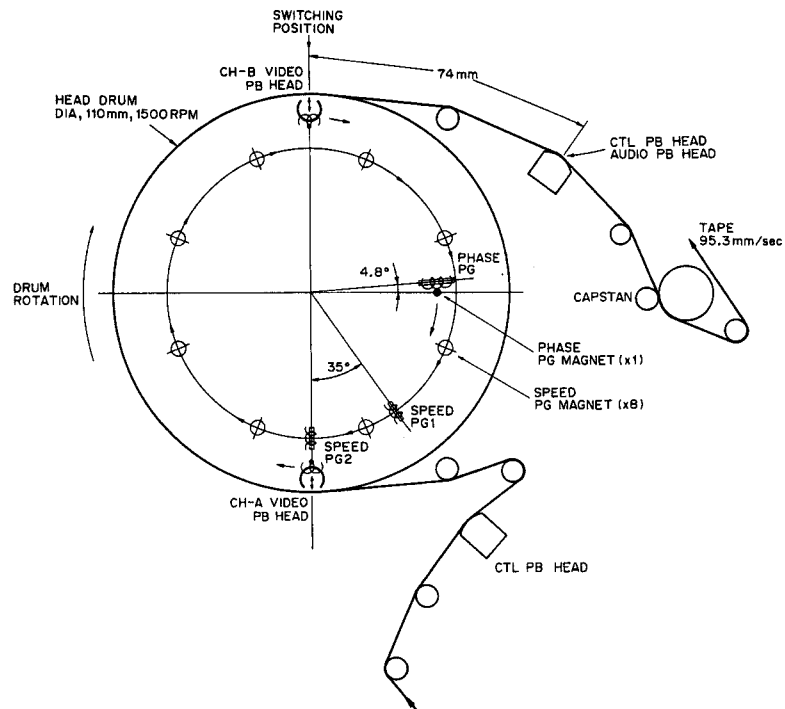
Adj; DL2/VP-13

VIDEO

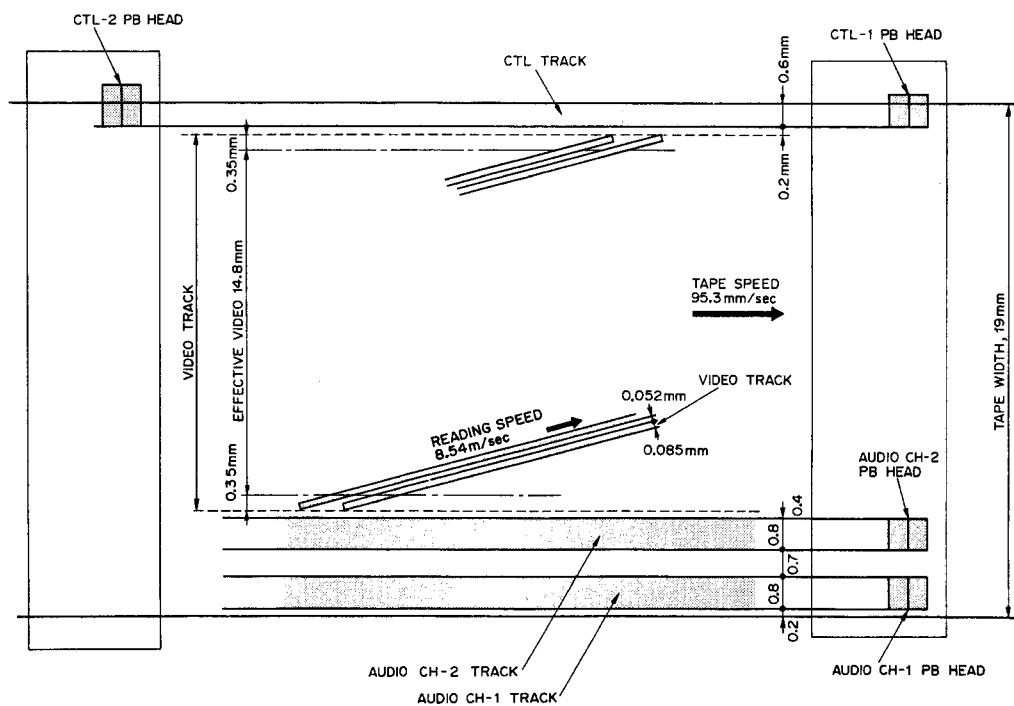
SECTION 12

BLOCK DIAGRAM AND TIMING CHARTS

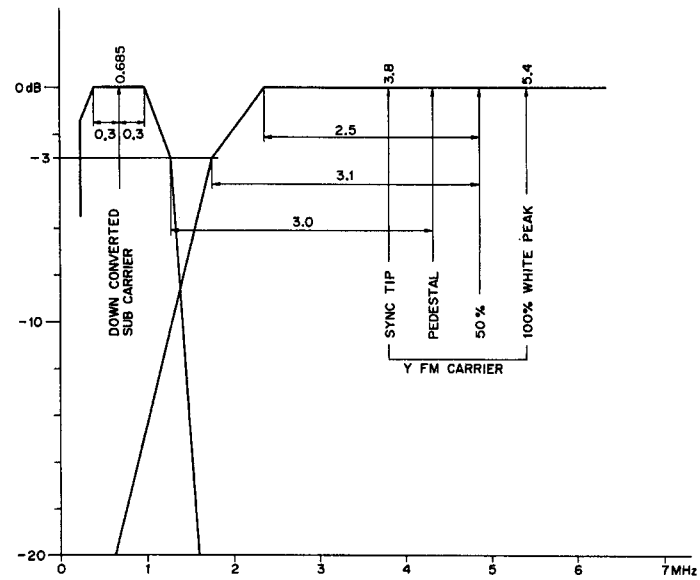
HEAD LOCATION



TAPE PATTERN



FREQUENCY ALLOCATION



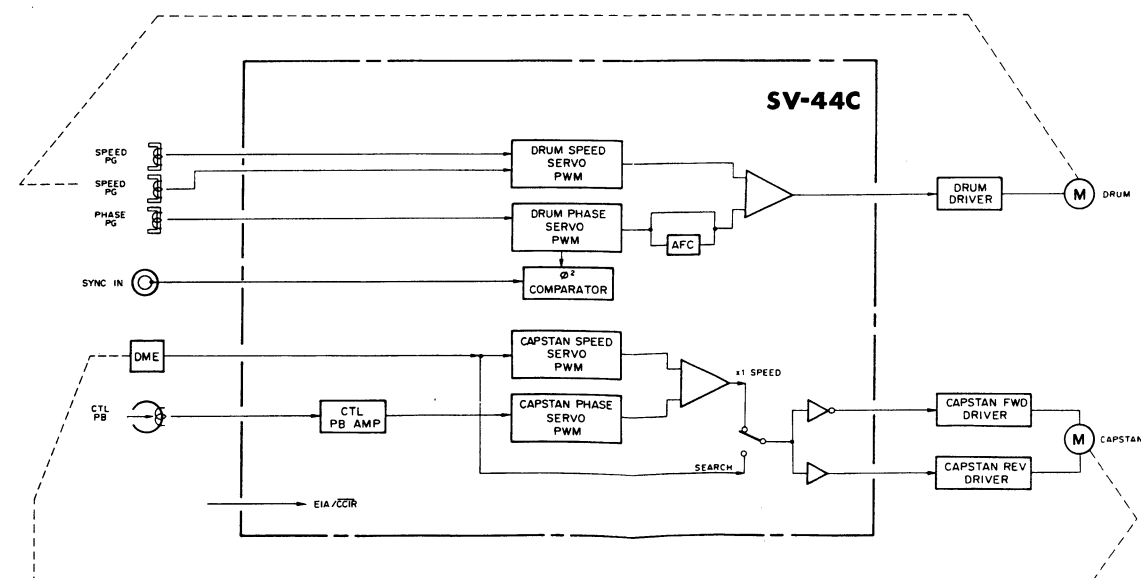
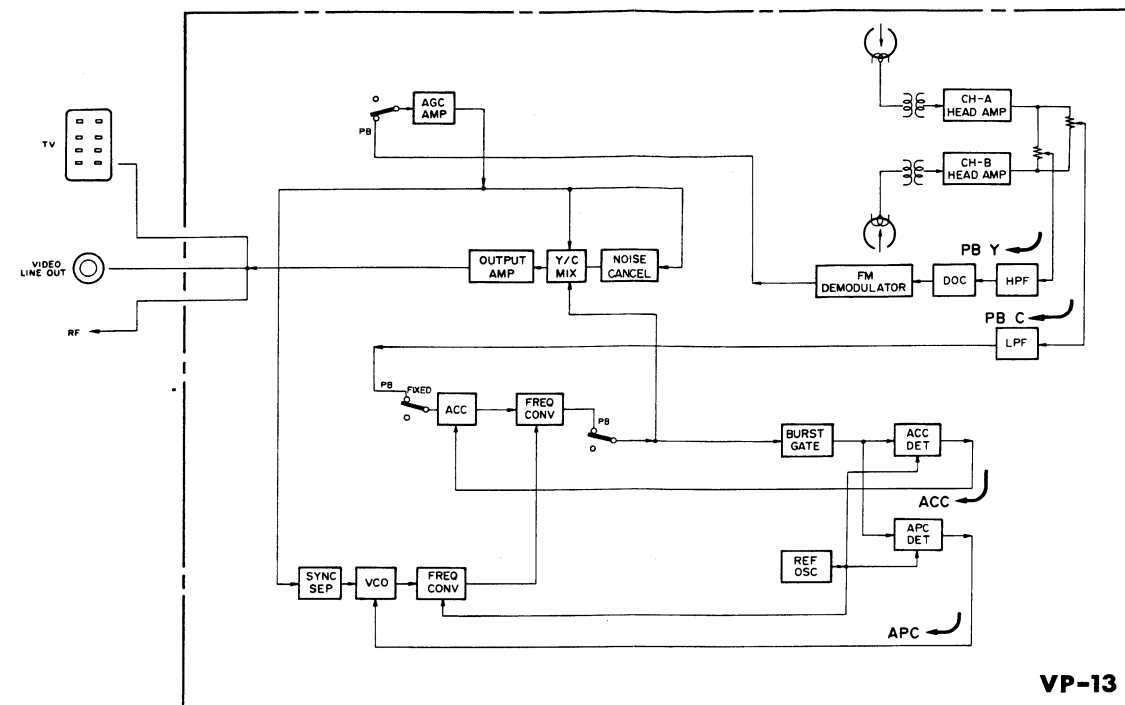
CIRCUIT FUNCTION OVERALL

CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARD

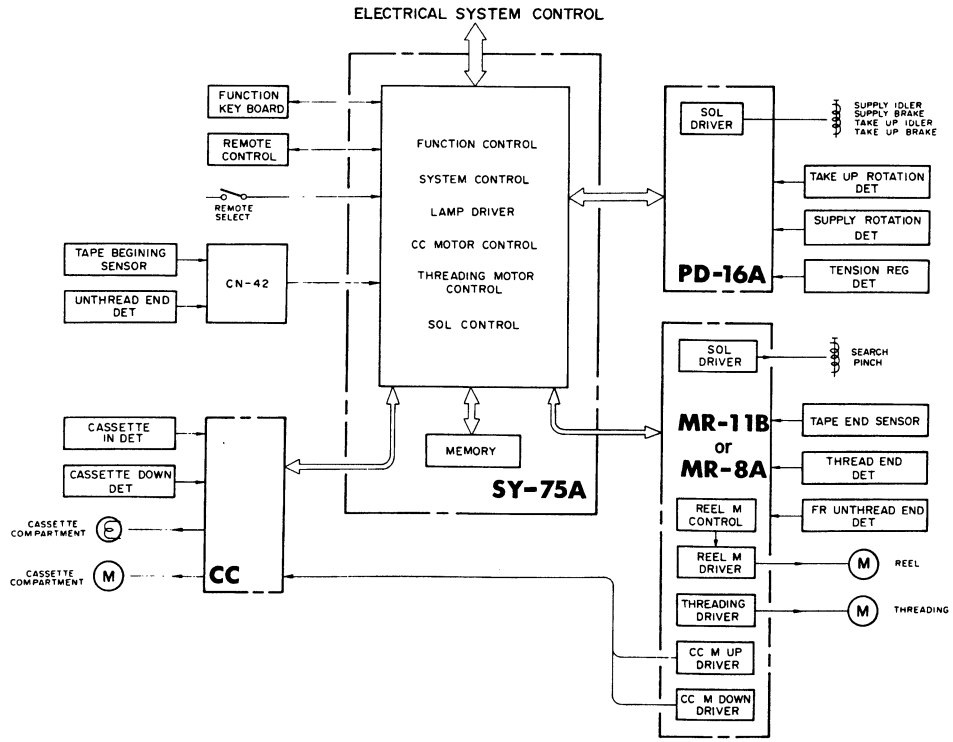
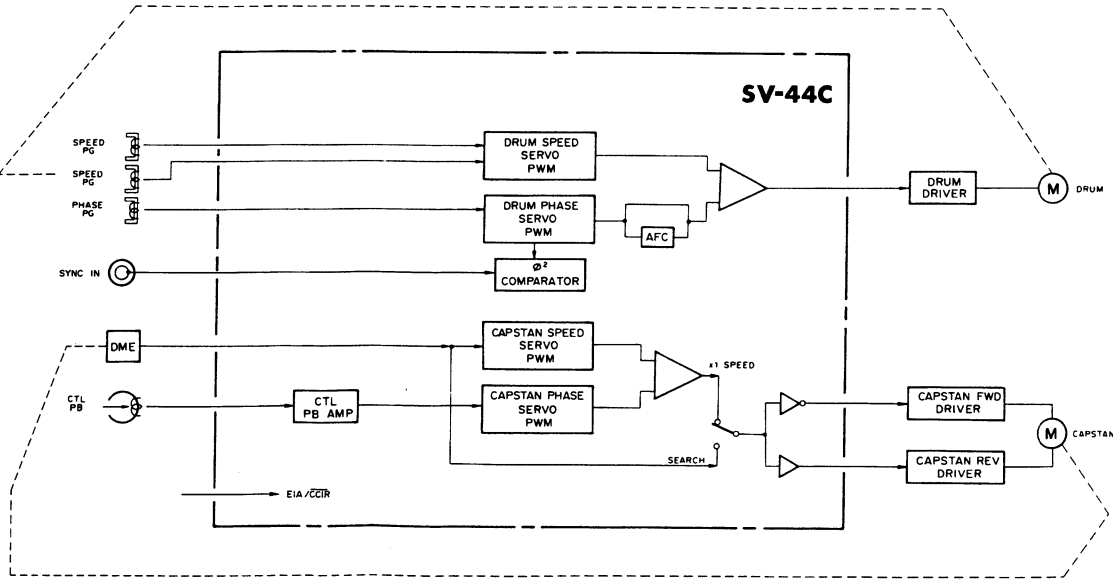
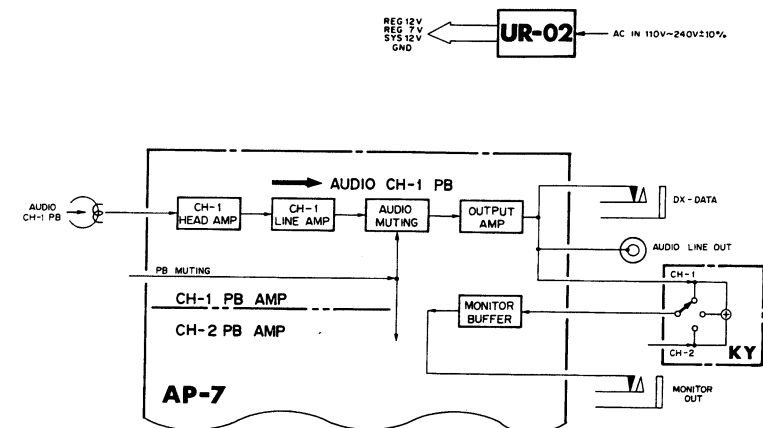
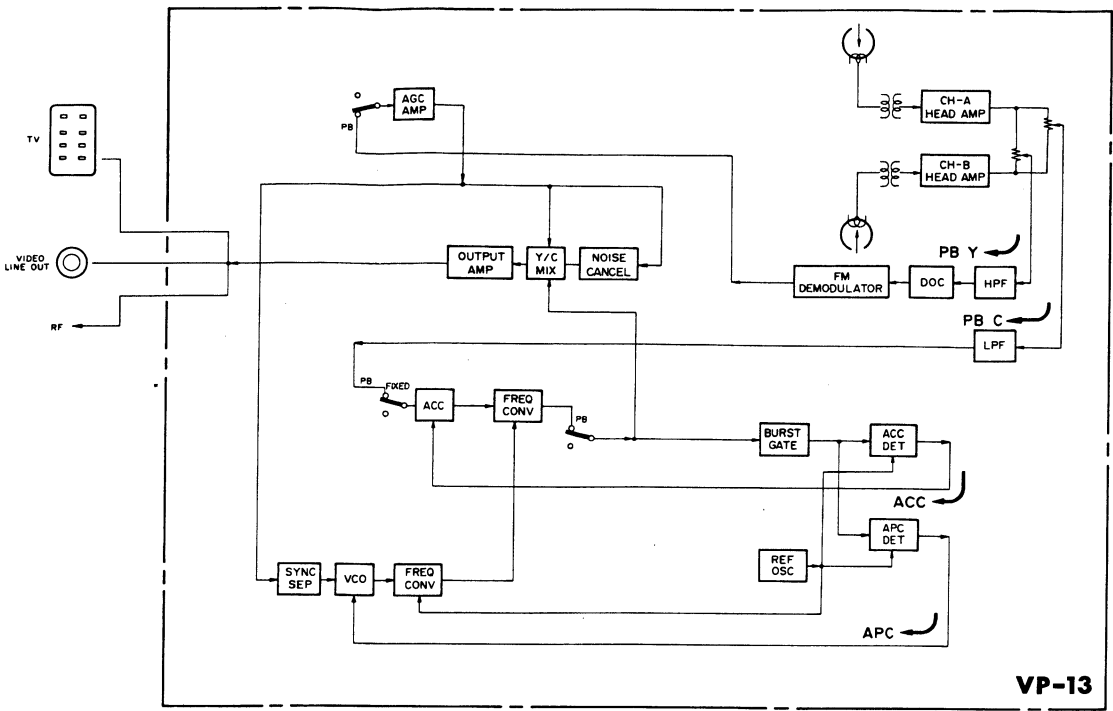
The Circuit Board Information is Provided Below

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VP-13	*Luminance and Chrominance Signal Demodulator
AUDIO	AH-3	*Audio PB and CTL PB Head
	AP-7	*Audio PB Amplifier
	HP-6	*Headphones jack
SERVO	DR-17B	*Drum/Capstan Driver
	SV-44C	*Drum/Capstan Speed and Phase PWM Servo
	EC-19	*CTL PB Head
POWER	AC-35	*AC input
	DC-13B	*Power Supply/Regulator
	UR-02	*Switching Regulator
SYSTEM CONTROL	CC-9	*Cassette Compartment Motor/Pilot Lamp
	CC-10	*Cassette In Detector
	CC-11	*Cassette Down Detector
	CN-42	*Connection Board
	FR-11	*Threading Ring Mechanical Position Detector
	KY-21C	*Function Key Board
		*Display Driver
		*Mode/Input/Monitor Select
	LM-9	*Threading Motor
	MR-8A	*Threading/CC Motor Driver
		*Reel Motor Control/Driver
	MR-11B	*Search/Pinch Solenoid Driver
	PD-16A	*Take up Idler/Brake
		Supply Idler/Brake Driver
	PH-4	*Tension Regulator
	PH-5	*Tape End/Tape Beginning Sensor
	PT-9	*Reel Motor Power Driver
	SW-43	*Supply/Take up Rotation Detector
	SW-50	*FR Unthread End Detector
SY-75A	*System Control	

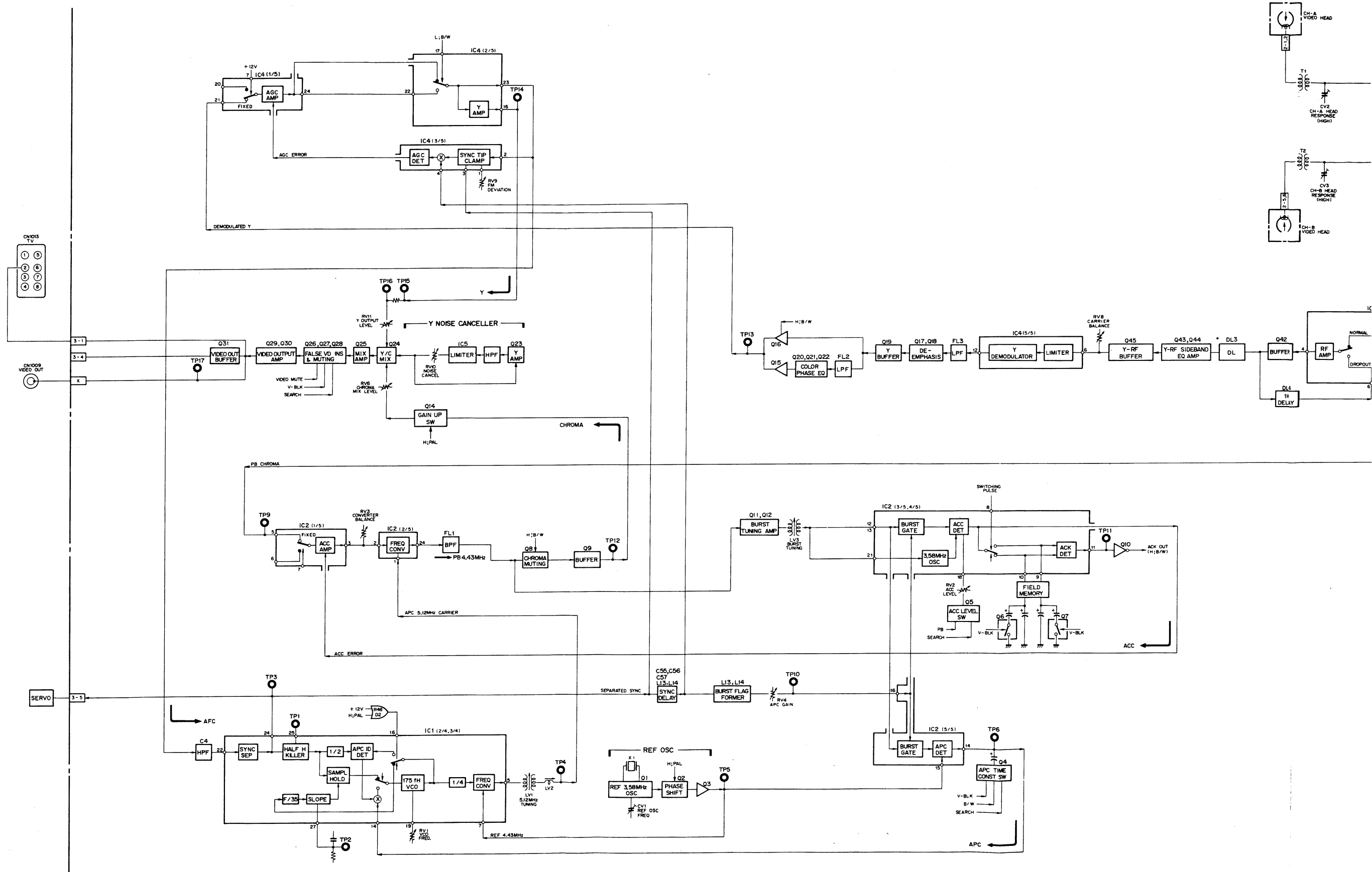
OVERALL BLOCK DIAGRAM



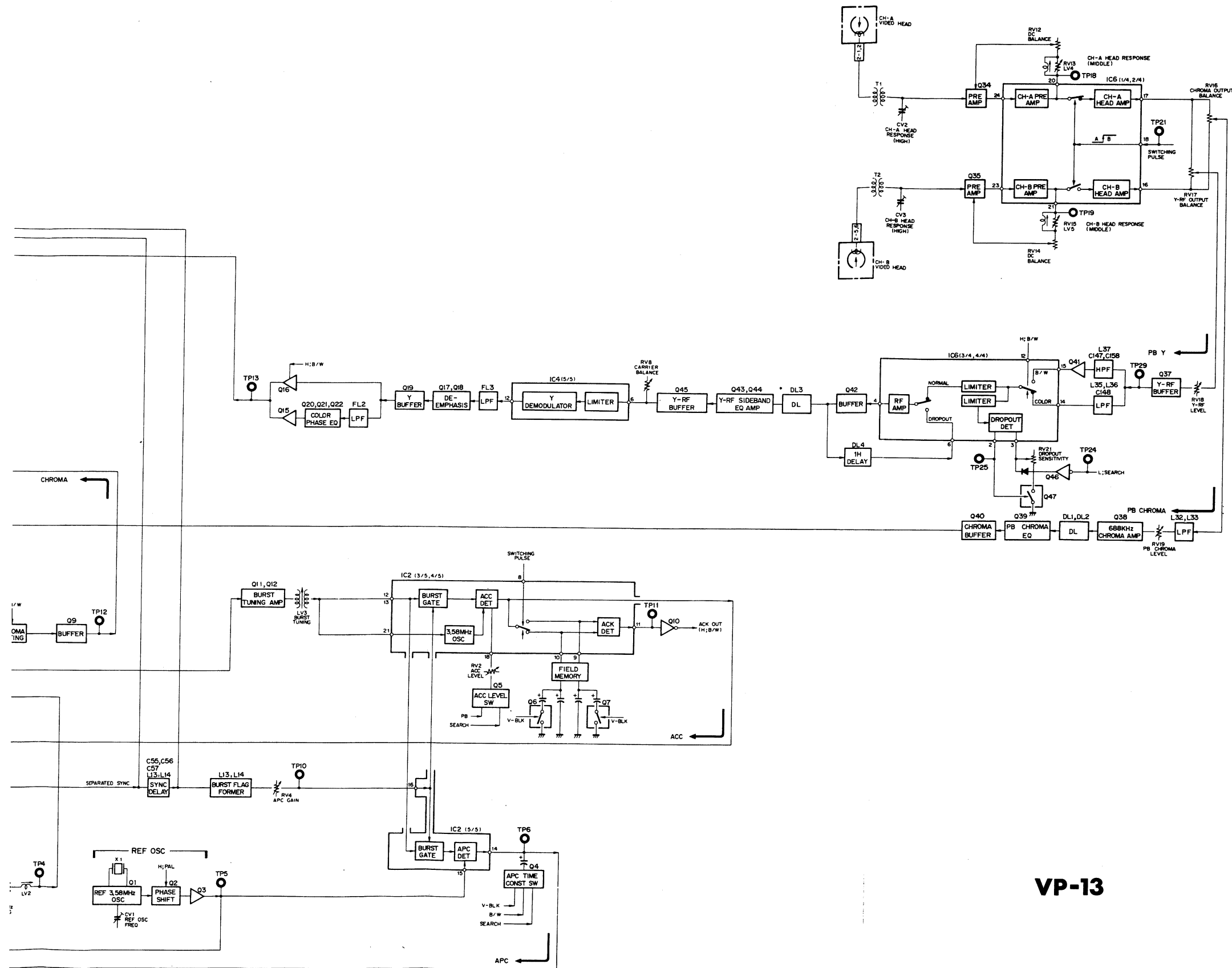
OVERALL BLOCK DIAGRAM



VIDEO SYSTEM BLOCK DIAGRAM



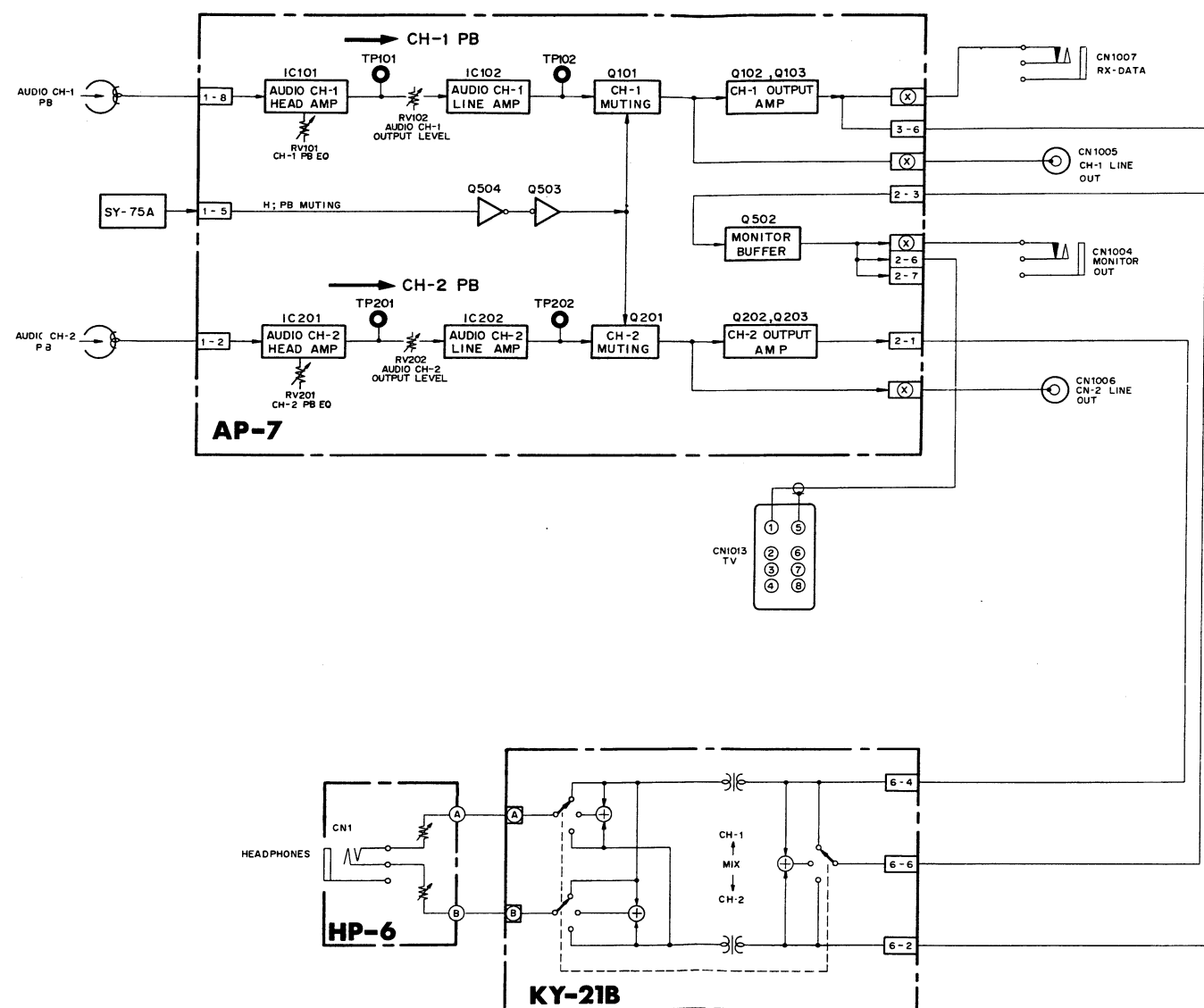
VIDEO VIDEO

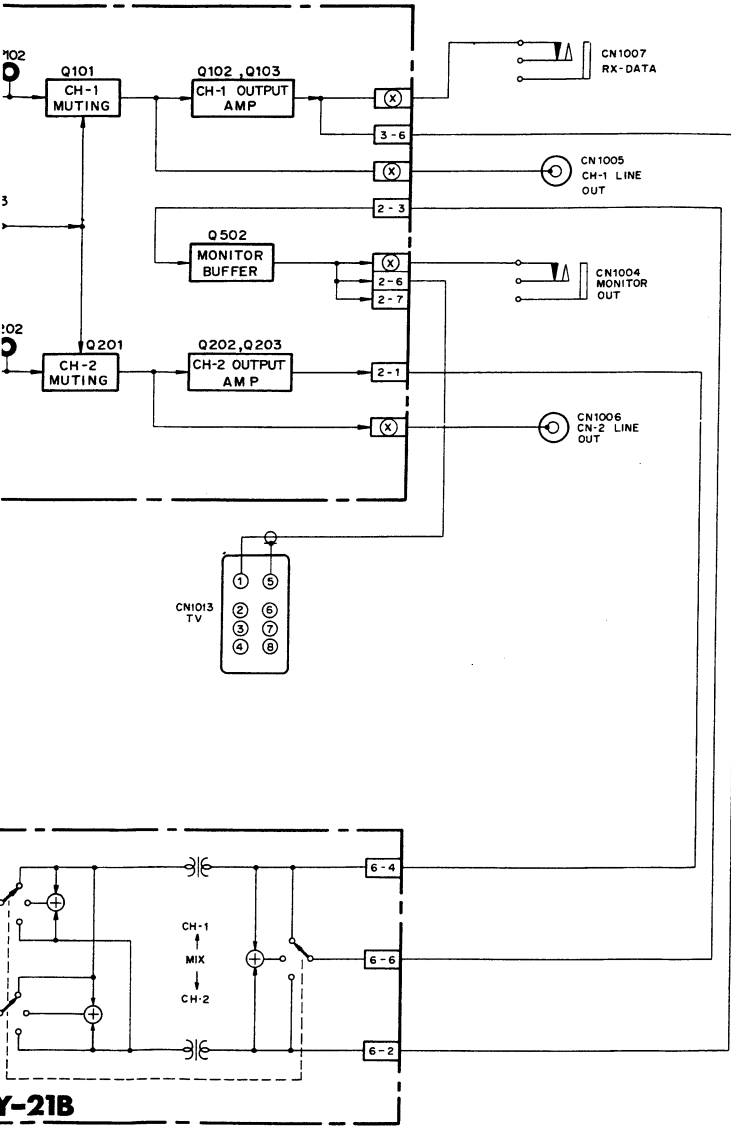


VP-13

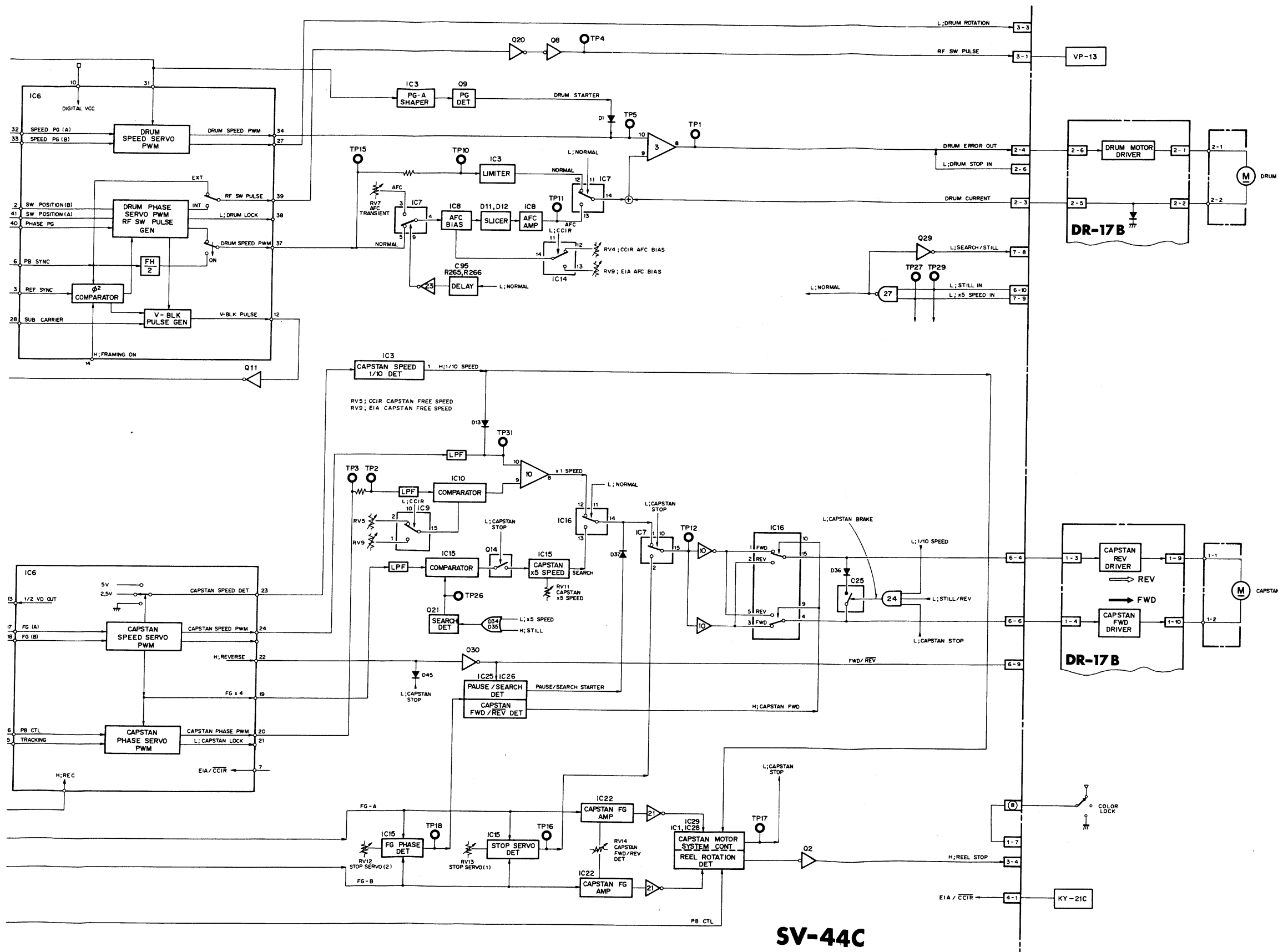
AUDIO AUDIO

AUDIO SYSTEM BLOCK DIAGRAM





SERVO SERVO

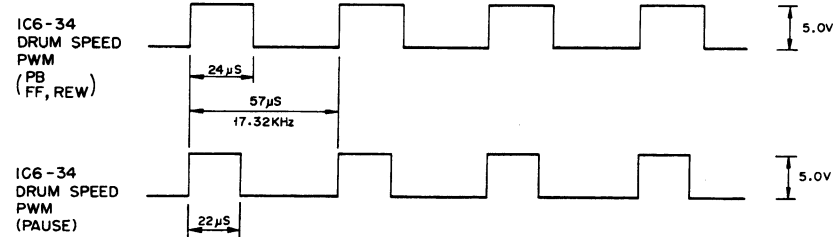
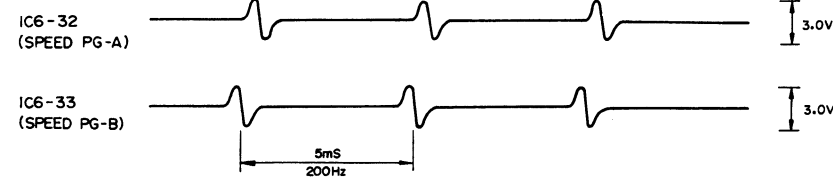


TIMING CHART (CCIR)

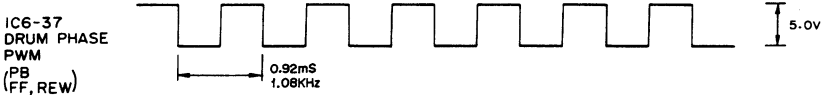
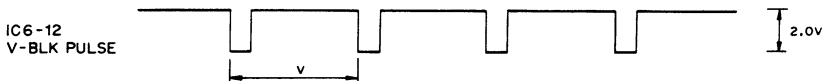
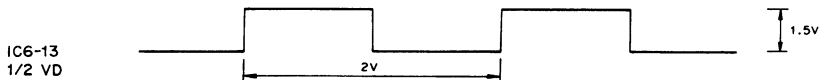
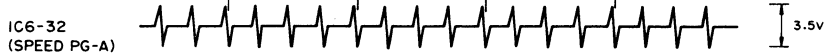
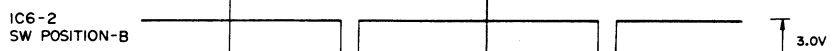
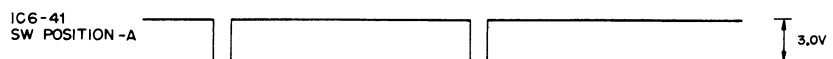
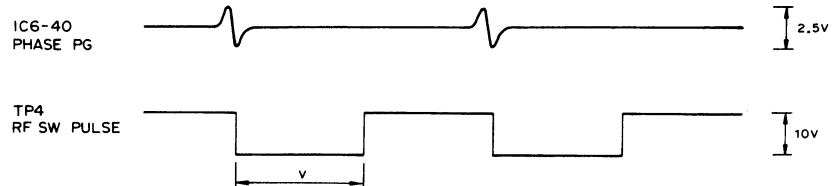
TIMING CHART (CCIR)

SERVO SYSTEM TIMING CHARTS CCIR (PAL/SECAM) mode

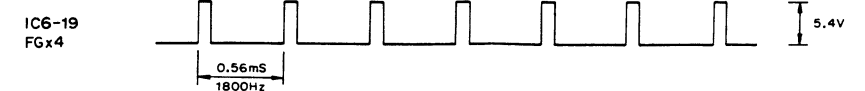
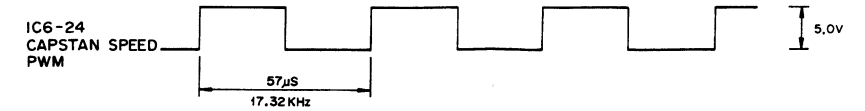
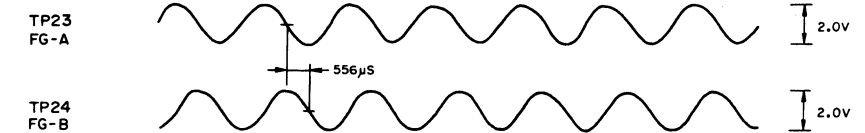
DRUM SPEED PWM SERVO



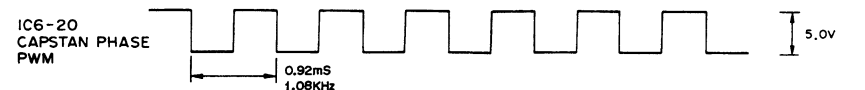
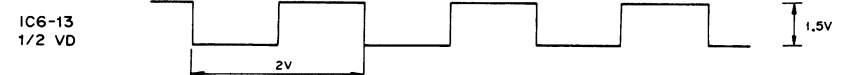
DRUM PHASE PWM SERVO



CAPSTAN SPEED PWM SERVO



CAPSTAN PHASE PWM SERVO

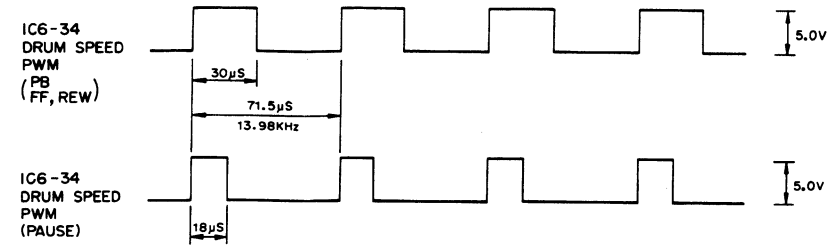
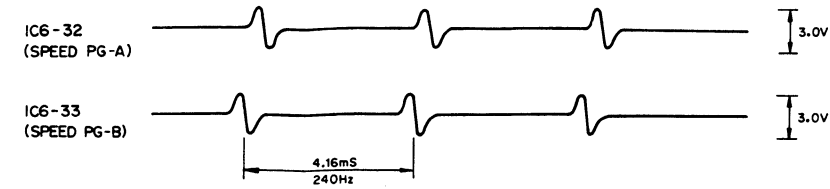


TIMING CHART (EIA)

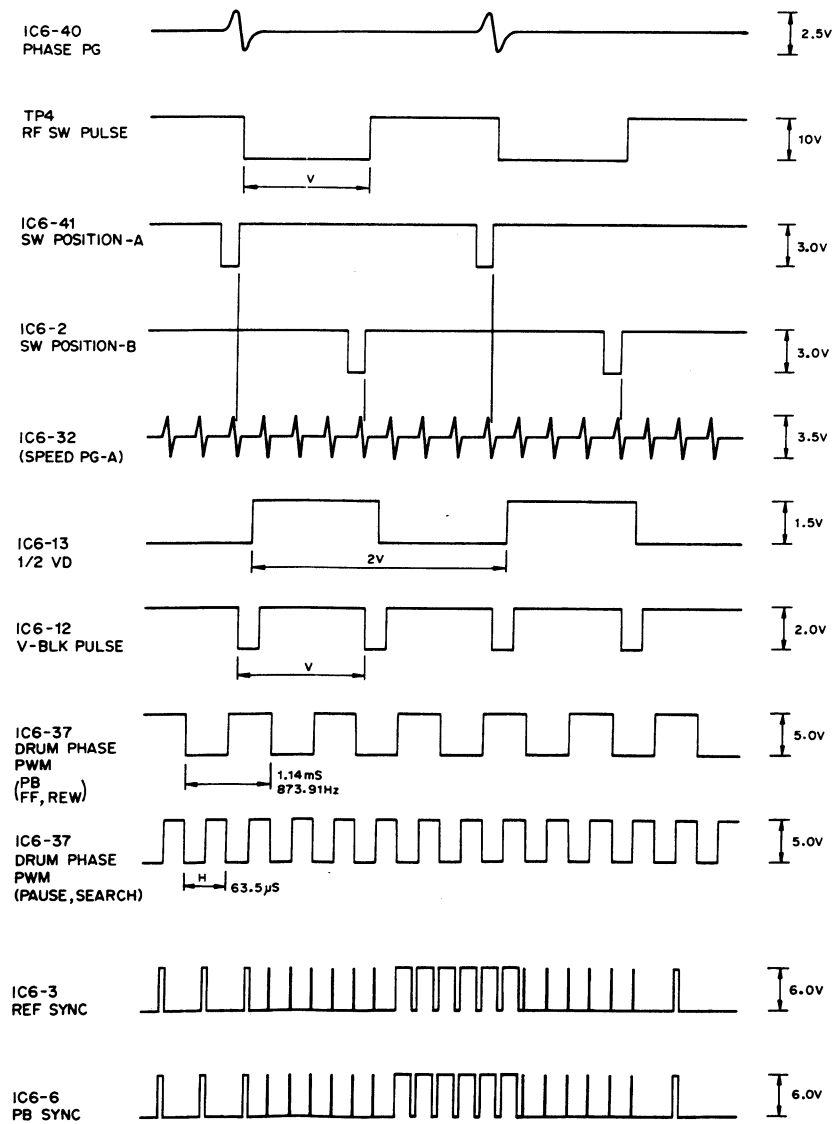
TIMING CHART (EIA)

EIA (NTSC) mode

DRUM SPEED PWM SERVO

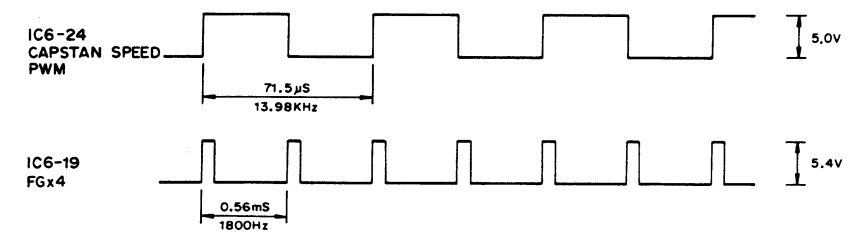
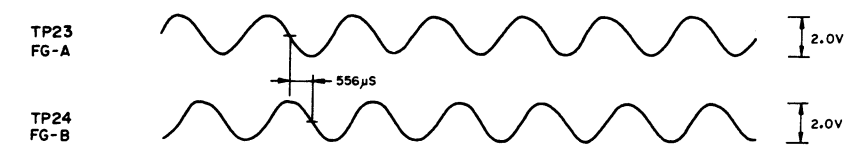


DRUM PHASE PWM SERVO

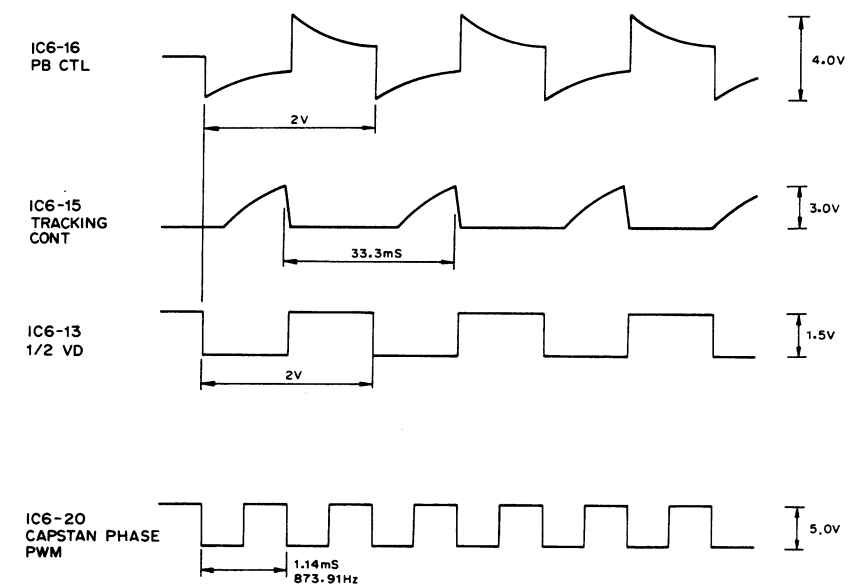


12-17

CAPSTAN SPEED PWM SERVO



CAPSTAN PHASE PWM SERVO



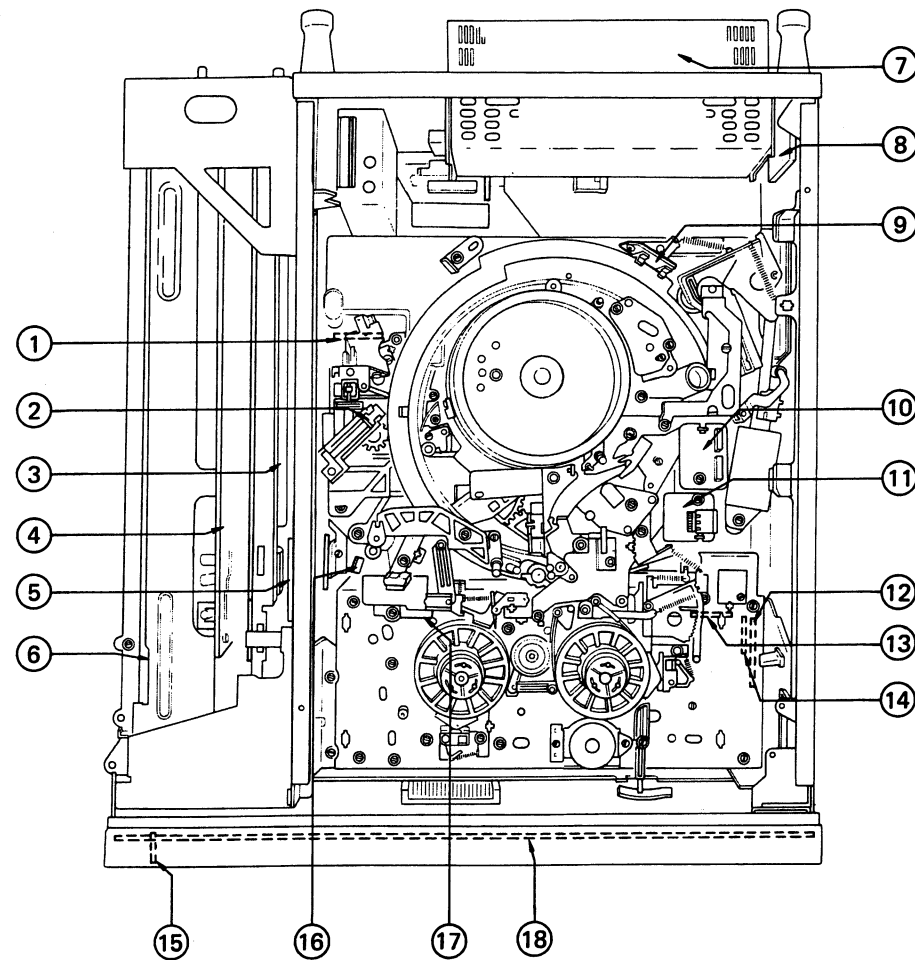
12-18

LOCATION

SECTION 13 PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

LOCATION OF MAIN PARTS

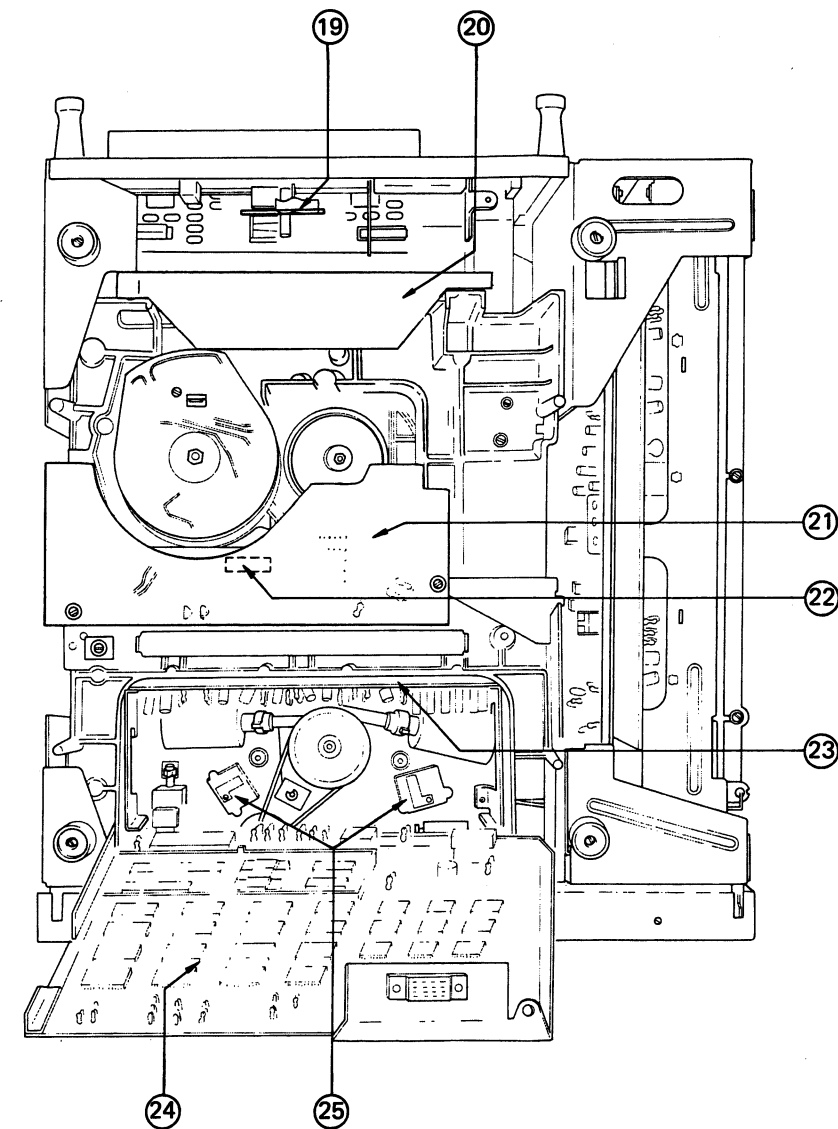
< TOP VIEW >



- ⑬ AC-35 BOARD
- ⑩ AH-3 BOARD
- ⑥ AP-7 BOARD
- ⑫ CC-9 BOARD (Assembled into cassette-up compartment)
- ⑬ CC-10 BOARD (Assembled into cassette-up compartment)
- ⑭ CC-11 BOARD (Assembled into cassette-up compartment)
- ⑤ CN-42 BOARD
- ⑧ DC-13 BOARD
- ⑫ DR-17B BOARD

13-1

< BOTTOM VIEW >



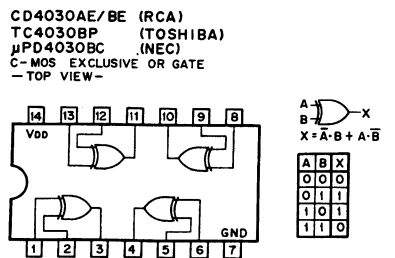
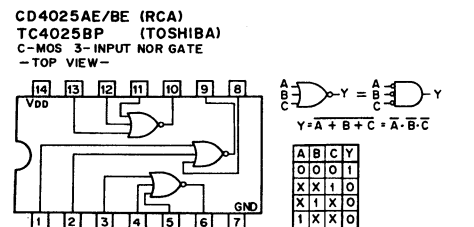
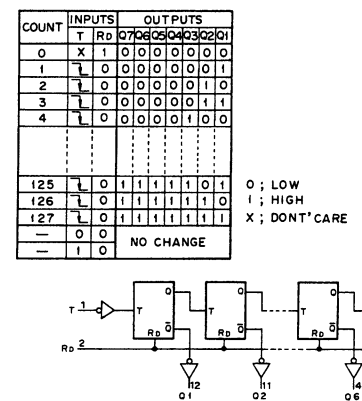
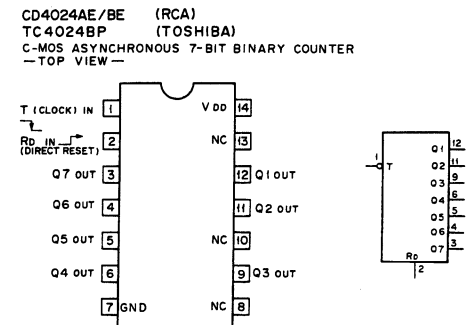
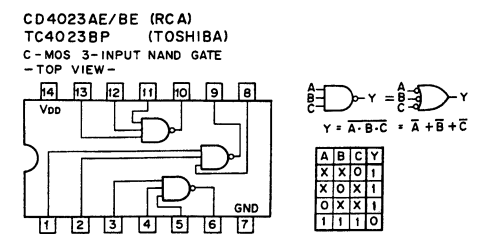
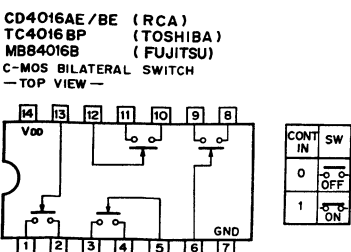
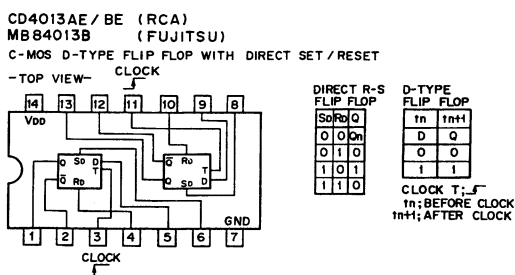
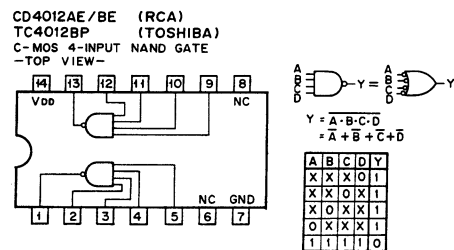
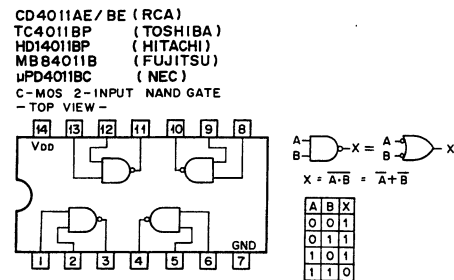
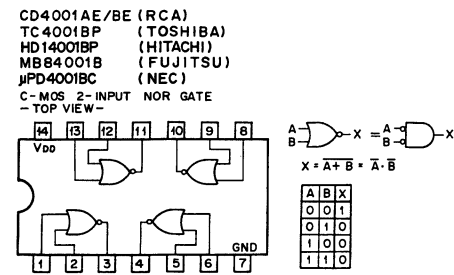
- ⑪ EC-19 BOARD
- ⑨ FR-11 BOARD
- ⑬ HP-6 BOARD
- ⑮ KY-21C BOARD
- ① LM-9 BOARD
- ⑮ MR-8A OR MR-11B BOARD
- ⑮ PD-16A BOARD
- ⑮ PH-4 BOARD
- ② PH-5 BOARD

- ⑮ PT-9 BOARD
- ⑦ UR-02 (Switching regulator)
- ④ SV-44C BOARD
- ⑮ SW-43 BOARD
- ⑮ SW-50 BOARD
- ⑮ SY-75A BOARD
- ③ VP-13 BOARD

13-2

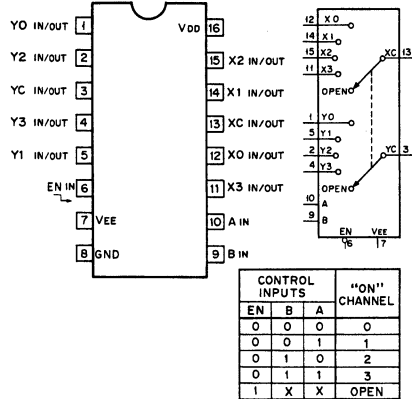
SEMICONDUCTOR ELECTRODES

TYPE	INTERCHANGEABILITY				PAGE
CD4001AE/BE CD4011AE/BE CD4012AE/BE CD4013AE/BE CD4016AE/BE CD4023AE/BE CD4024AE/BE CD4025AE/BE CD4030AE/BE	TC4001BP TC4011BP TC4012BP TC4016BP TC4023BP TC4024BP TC4025BP TC4030BP	HD14001BP HD14011BP 	MB84001B MB84011B MB84013B MB84016B	uPD4001BC uPD4011BC uPD4030BC	13-4
CD4052BE CD4053BE CD4069UBE CD4071BE CD4073BE CD4075BE CD4081BE CX-130 CX-134A	TC4052BP TC4053BP TC4069UBP TC4071BP TC4073BP TC4075BP TC4081BP	HD14053BP HD14069UBP	MB84069B	uPD4069UBC uPD4071BC uPD4081BC	13-5
CX-187 CX-188 CX-757 CX-859 LM324 LM358JG				uPC324C uPC358C	13-6
M54519P M54529P MC14520BCP MC14538BCP MC14584BCP NJM2903D	TC4520BP	HD14538BP		uPD4584BC	13-7
M-54543L RC4558 TA7060AP TC4013BP uPC1158H2 uPC311C	NJM4558D			uPC4558C	13-8

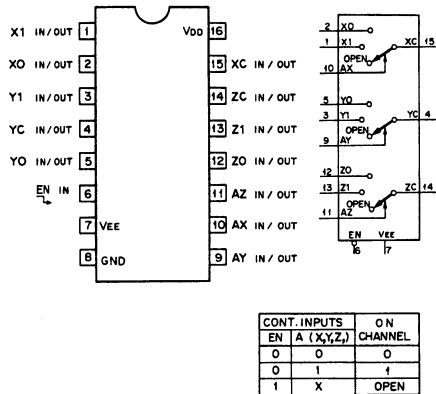


SEMICONDUCTOR ELECTRODES

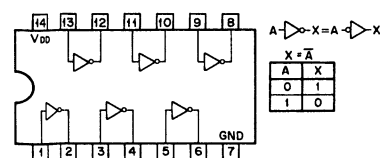
CD4052BE (RCA)
TC4052BP (TOSHIBA)
C-MOS 4-CHANNEL MULTIPLEXER / DEMULTIPLEXER
— TOP VIEW —



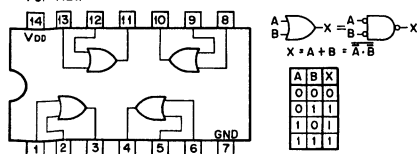
CD4053BE (RCA)
TC4053BP (TOSHIBA)
HD14053BP (HITACHI)
C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER
— TOP VIEW —



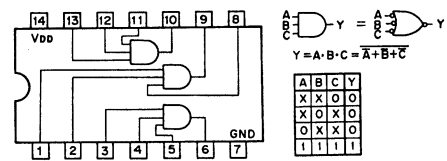
CD4069UBE (RCA)
TC4069UBP (TOSHIBA)
HD14069BP (HITACHI)
MB84069B (FUJITSU)
μPD4069UBC (NEC)
C-MOS INVERTER
— TOP VIEW —



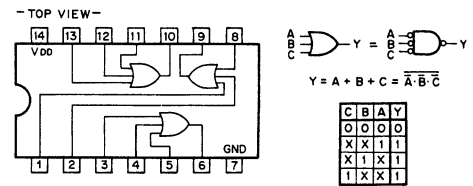
CD4071BE (RCA)
TC4071BP (TOSHIBA)
μPD4071BC (NEC)
C-MOS 2-INPUT OR GATE
— TOP VIEW —



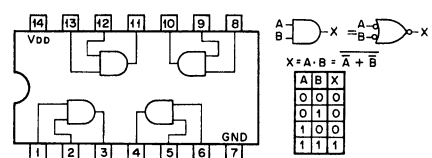
CD4073BE (RCA)
TC4073BP (TOSHIBA)
C-MOS 3-INPUT POSITIVE AND GATE
— TOP VIEW —



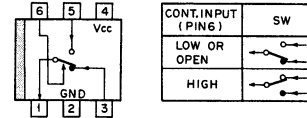
CD4075BE (RCA)
TC4075BP (TOSHIBA)
C-MOS 3-INPUT OR GATE
— TOP VIEW —



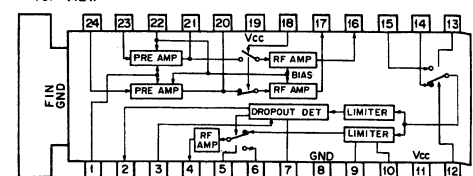
CD4081BE (RCA)
TC4081BP (TOSHIBA)
μPD4081BC (NEC)
C-MOS 2-INPUT AND GATE
— TOP VIEW —



CX130 (SONY)
ANALOG SWITCH
— TOP VIEW —

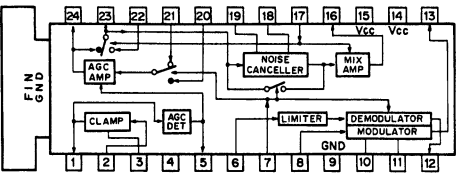


CX134A (SONY)
— TOP VIEW —

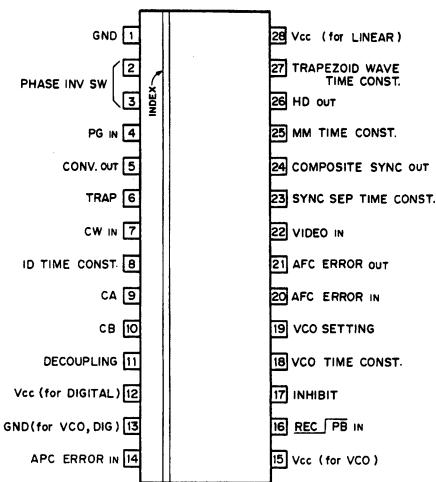


SEMICONDUCTOR ELECTRODES

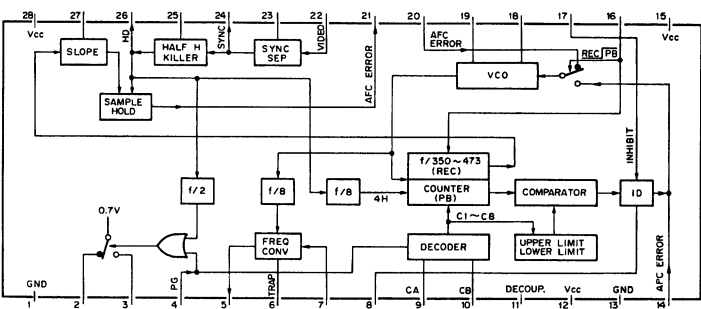
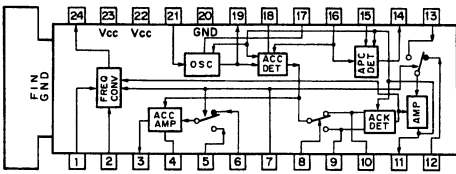
CX187 (SONY)
- TOP VIEW -



CX859 (SONY)
- TOP VIEW -



CX188 (SONY)
- TOP VIEW -



DECODER TRUTH TABLE

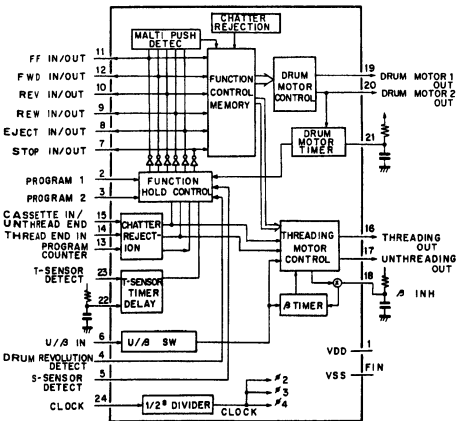
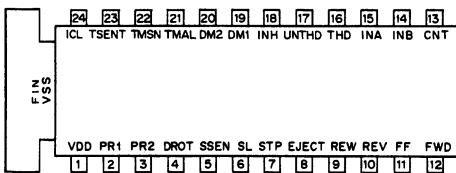
CB	CA	LOW	OPEN	HIGH
LOW	C1	C7	—	
OPEN	C4	C5	C6	
HIGH	—	*C2	C3	C8

* PG: L --- C2
PG: H --- C3

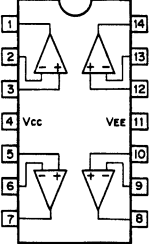
AFC/APC PRESET DATA

	AFC COUNT DOWN	APC ID COUNT	
		UPPER LIM.	LOWER LIM.
C1	f / 473	105	95
C2	f / 351	129	119
C3	f / 353	137	127
C4	f / 351	118	104
C5	f / 351	131	117
C6	f / 351	144	130
C7	f / 350	136	104
C8	—	125	115

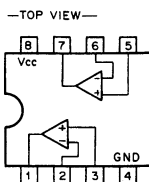
CX757 (SONY)
P-MOS VTR SYSTEM CONTROL
- TOP VIEW -



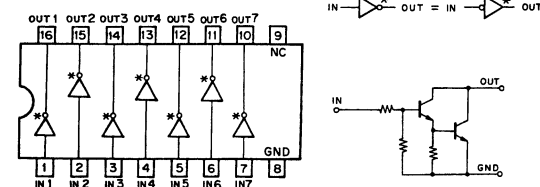
LM324 (NSC)
μPC324C (NEC)
QUAD. OP. AMPLIFIER
- TOP VIEW -



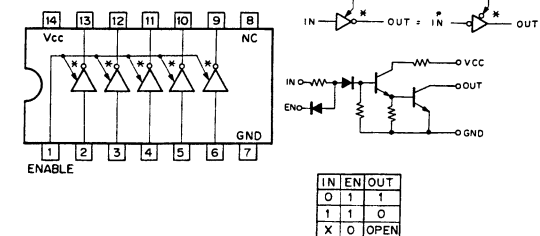
LM358JG (TI)
μPC358C (NEC)
DUAL OPERATIONAL AMPLIFIERS
- TOP VIEW -



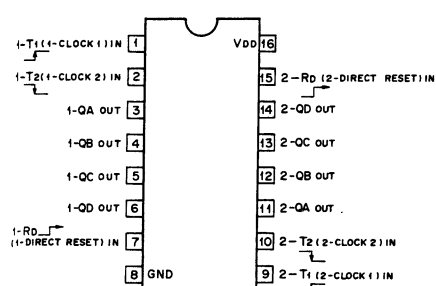
M54519P (MITSUBISHI)
7 STAGE DRIVER
- TOP VIEW -



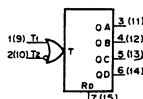
M54529P (MITSUBISHI)
TRANSISTOR ARRAY
- TOP VIEW -



MC14520BCP (MOTOROLA)
TC4520BP (TOSHIBA)
C-MOS DUAL 4-BIT BINARY UP COUNTER
- TOP VIEW -

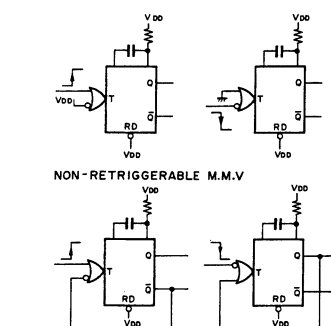
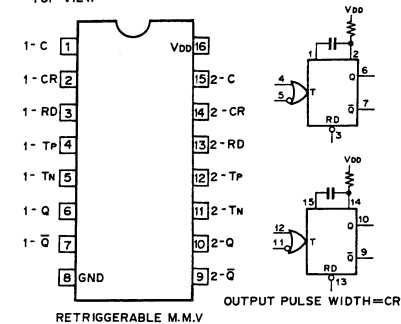


STATE	OUTPUTS
0	00000000
1	00000001
2	00000010
3	00000011
4	00000100
5	00000101
6	00000110
7	00000111
8	00001000
9	00001001
10	00001010
11	00001011
12	00001100
13	00001101
14	00001110
15	00001111

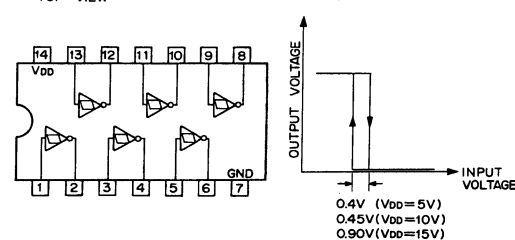


T1	T2	Rd	ACTION
0	1	0	INCREMENT COUNTER
0	1	1	INCREMENT COUNTER
1	0	0	NO CHANGE
1	0	1	NO CHANGE
1	1	0	NO CHANGE
1	1	1	NO CHANGE
1	1	1	QA THRU QD = 0

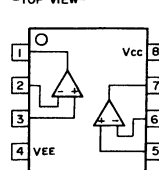
MC14538BCP (MOTOROLA)
HD14538BP (HITACHI)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
- TOP VIEW -



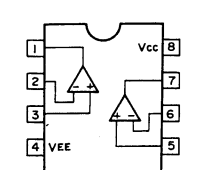
MC14584BCP (MOTOROLA)
μPD4584BC (NEC)
C-MOS SCHMITT TRIGGER INVERTER
- TOP VIEW -



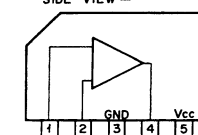
NJM2903D (JRC)
OPERATIONAL AMPLIFIER
- TOP VIEW -



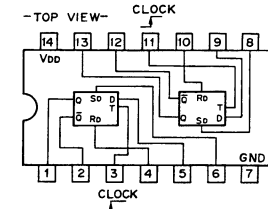
RC4558 (RAYTHEON)
NJM4558D (JRC)
μPC4558C (NEC)
OPERATIONAL AMPLIFIER
- TOP VIEW -



TA7060AP (TOSHIBA)
LINEAR AMP
- SIDE VIEW -

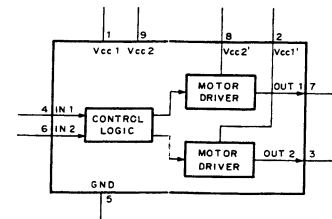
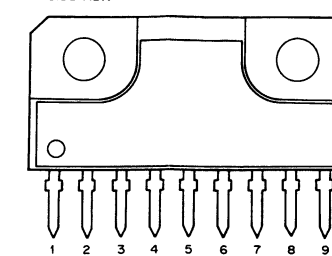


TC4013BP (TOSHIBA)
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET / RESET
- TOP VIEW -



DIRECT R-S FLIP FLOP	D-TYPE FLIP FLOP
Q	Q
0	0
1	1
1	1

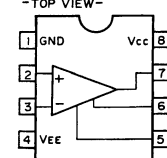
M54543L (MITSUBISHI)
BI-DIRECTIONAL MOTOR DRIVER
- SIDE VIEW -



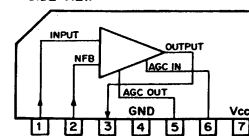
IN	OUT	MODE
1	1	2
0	0	2
1	0	1
0	1	1
1	1	0

0: LOW LEVEL
1: HIGH LEVEL
2: HIGH IMPEDANCE

μPC311C (NEC)
VOLTAGE COMPARATOR
- TOP VIEW -

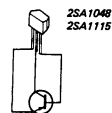
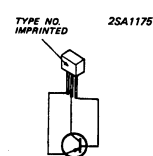
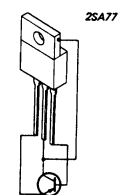
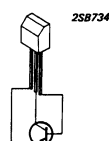
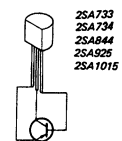
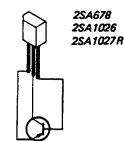


μPC1158H2 (NEC)
LOW NOISE PREAMPLIFIER WITH AGC
- SIDE VIEW -

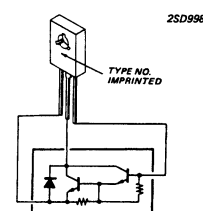
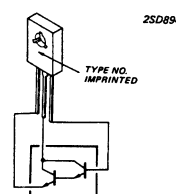
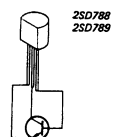
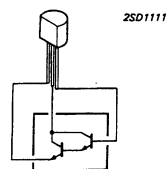
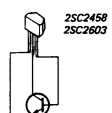
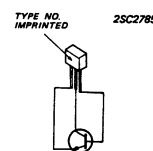
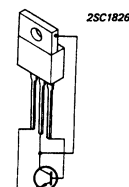
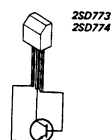
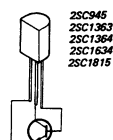
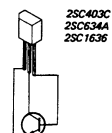


SEMICONDUCTOR ELECTRODES

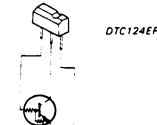
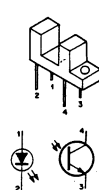
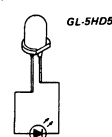
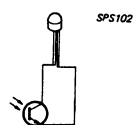
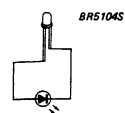
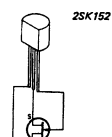
(2SA***, 2SB***)



(2SC***, 2SD***)



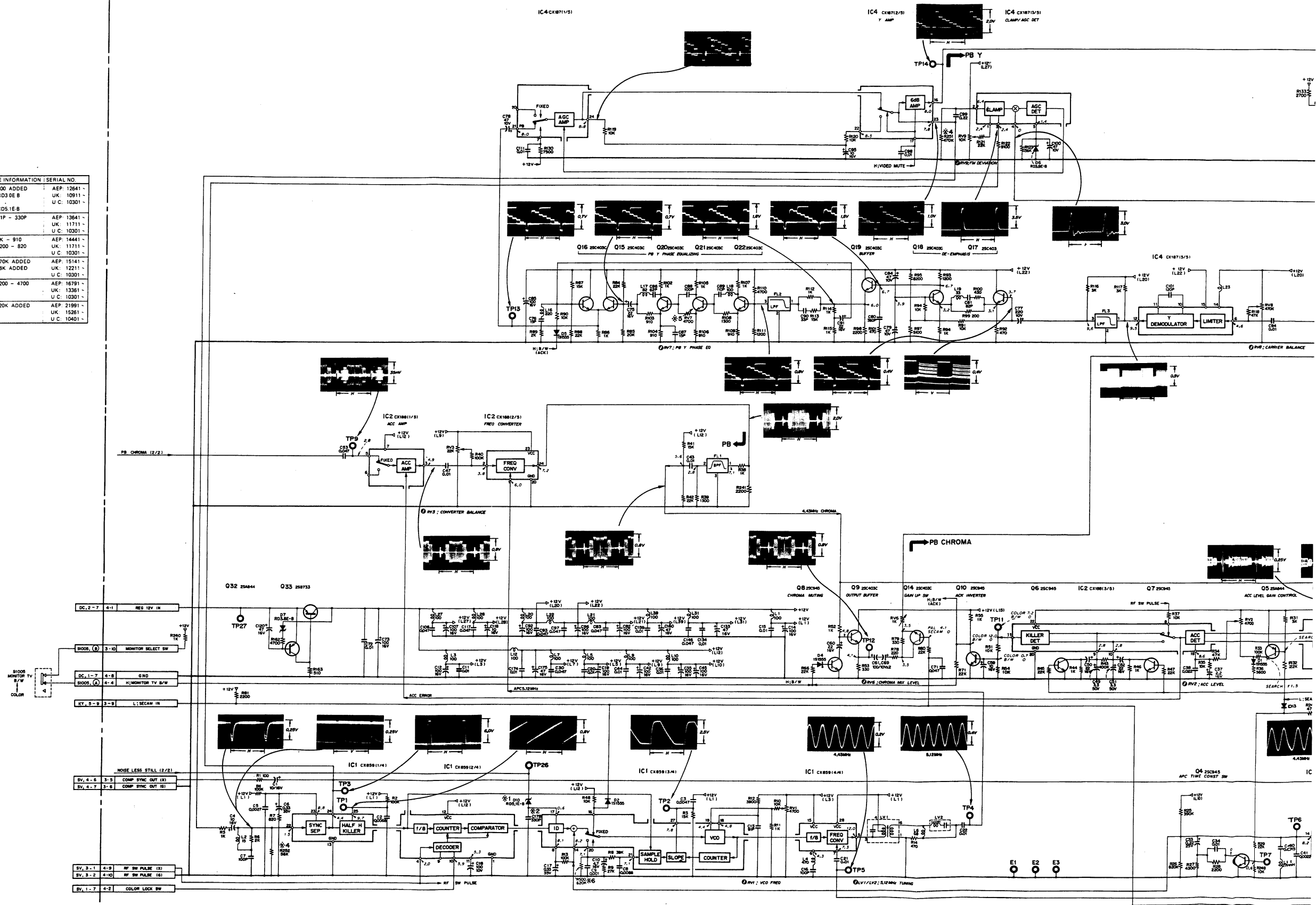
(OTHER)



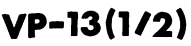
VP-13 (1/2)

VP-13 (1/2)
(VIDEO DEMODULATOR)

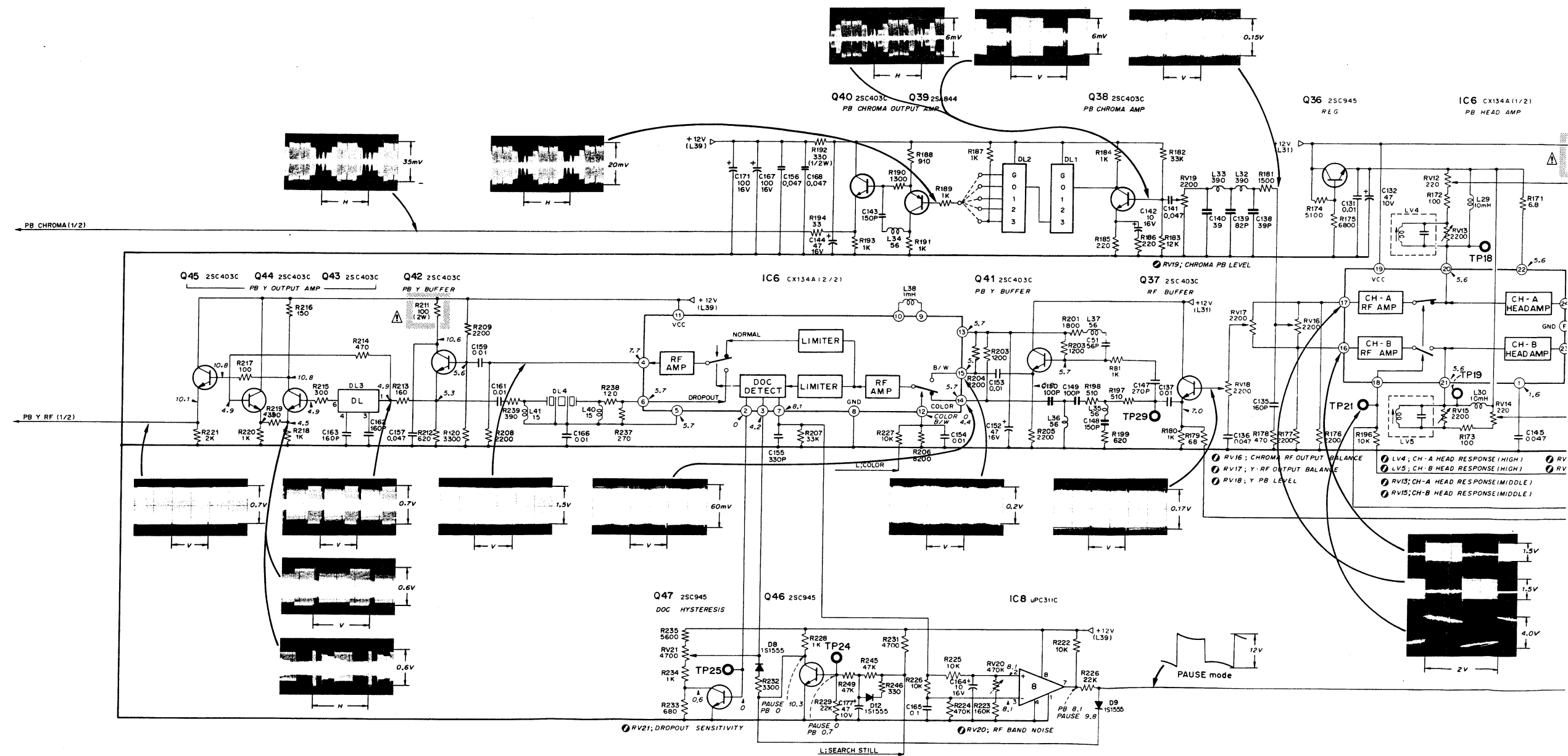
NOTE:		
MARK	CHANGE INFORMATION	SERIAL NO.
X1	R250 100 ADDED D10 R03 9E B	AEP: 12641 UK: 10911 U.C. 10301
	R05 1E B	
X2	C178 51P - 330P	AEP: 13641 UK: 11711 U.C. 10301
	R155 1K - 910	AEP: 14441 UK: 11711 U.C. 10301
X3	R155 1K 200 - 820	
	R251 470K ADDED R252 56K ADDED	AEP: 15441 UK: 12211 U.C. 10301
X4	RV7 2200 - 4700	AEP: 16791 UK: 13361 U.C. 10301
	R500 620K ADDED	AEP: 21991 UK: 15261 U.C. 10401

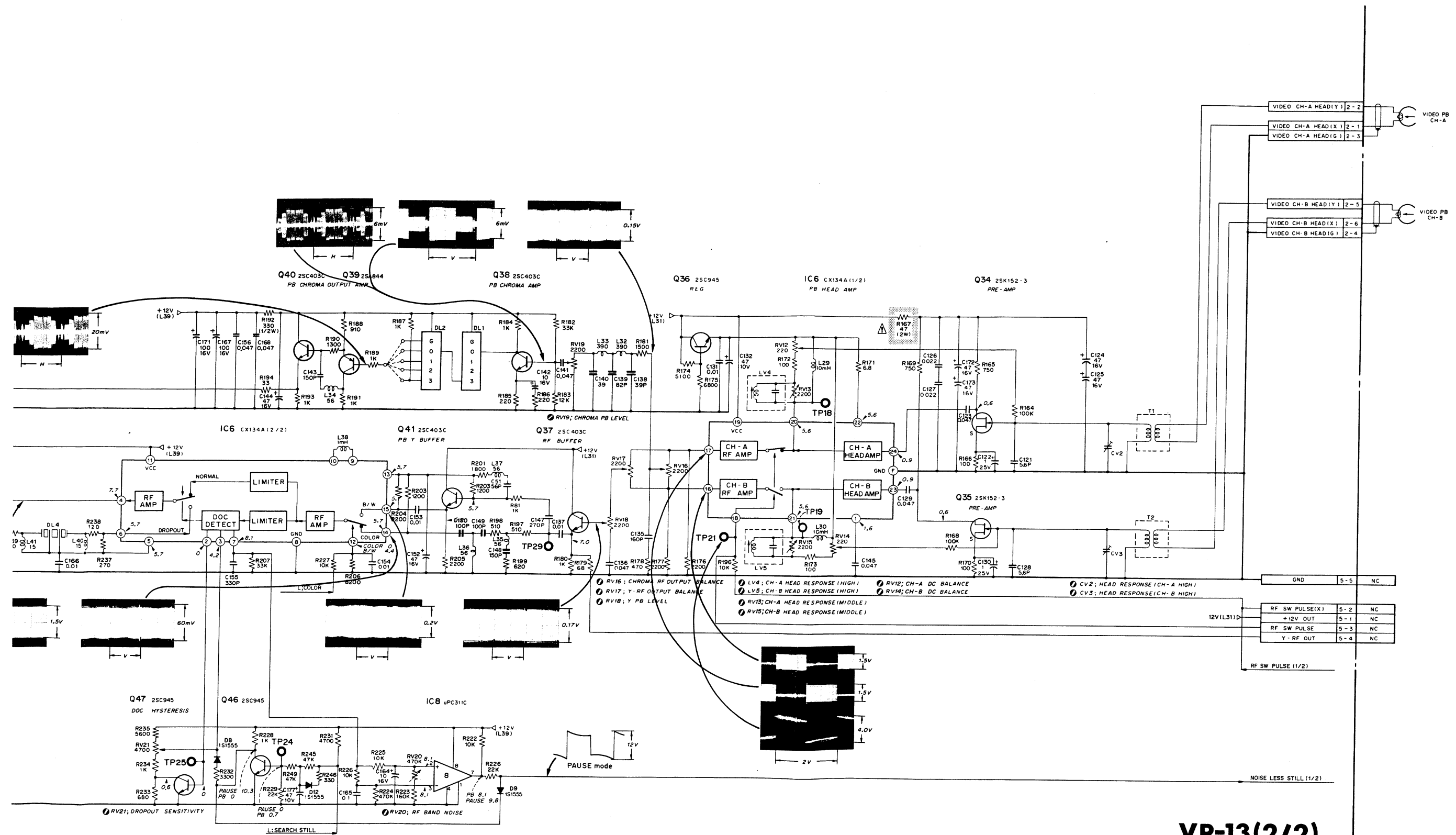


VP-13 (1/2)



VP-13 (2/2)
(VIDEO PB AMPLIFIER)

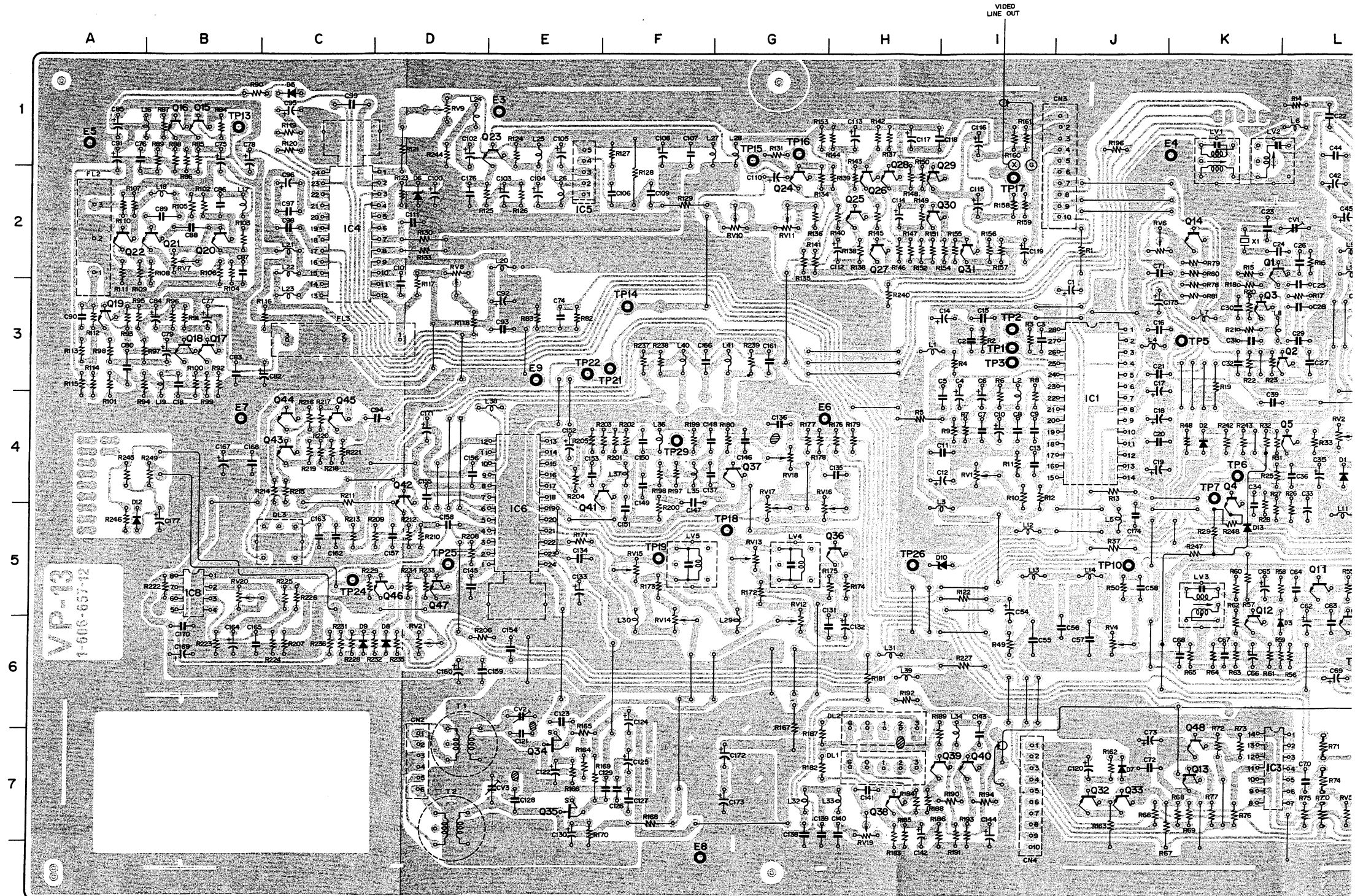


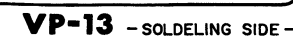


VP-13(2/2)

VP-13
(VIDEO PB/DEMODULATOR)

S/N UP TO 10840 (AEP)
S/N UP TO 10110 (UK)



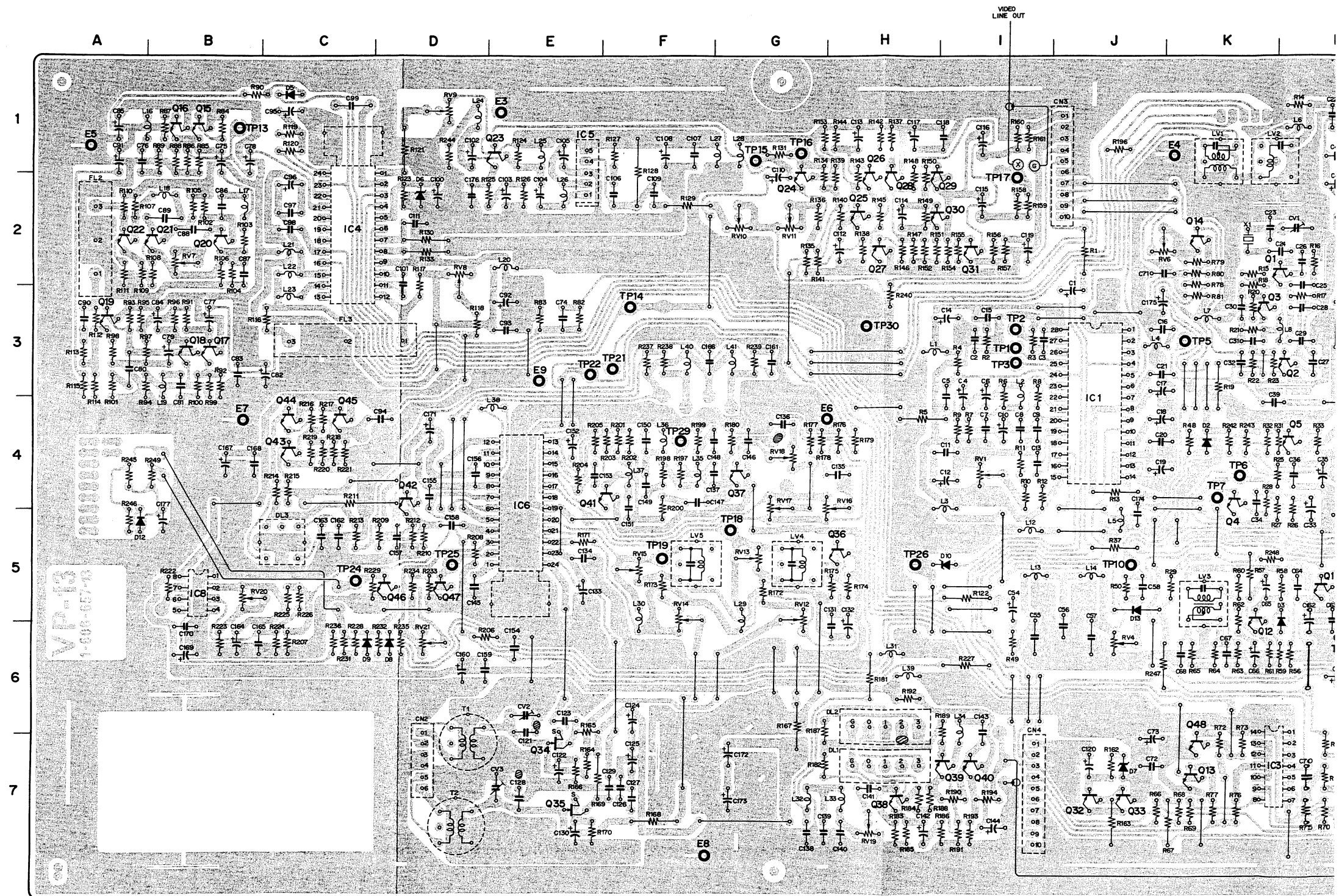


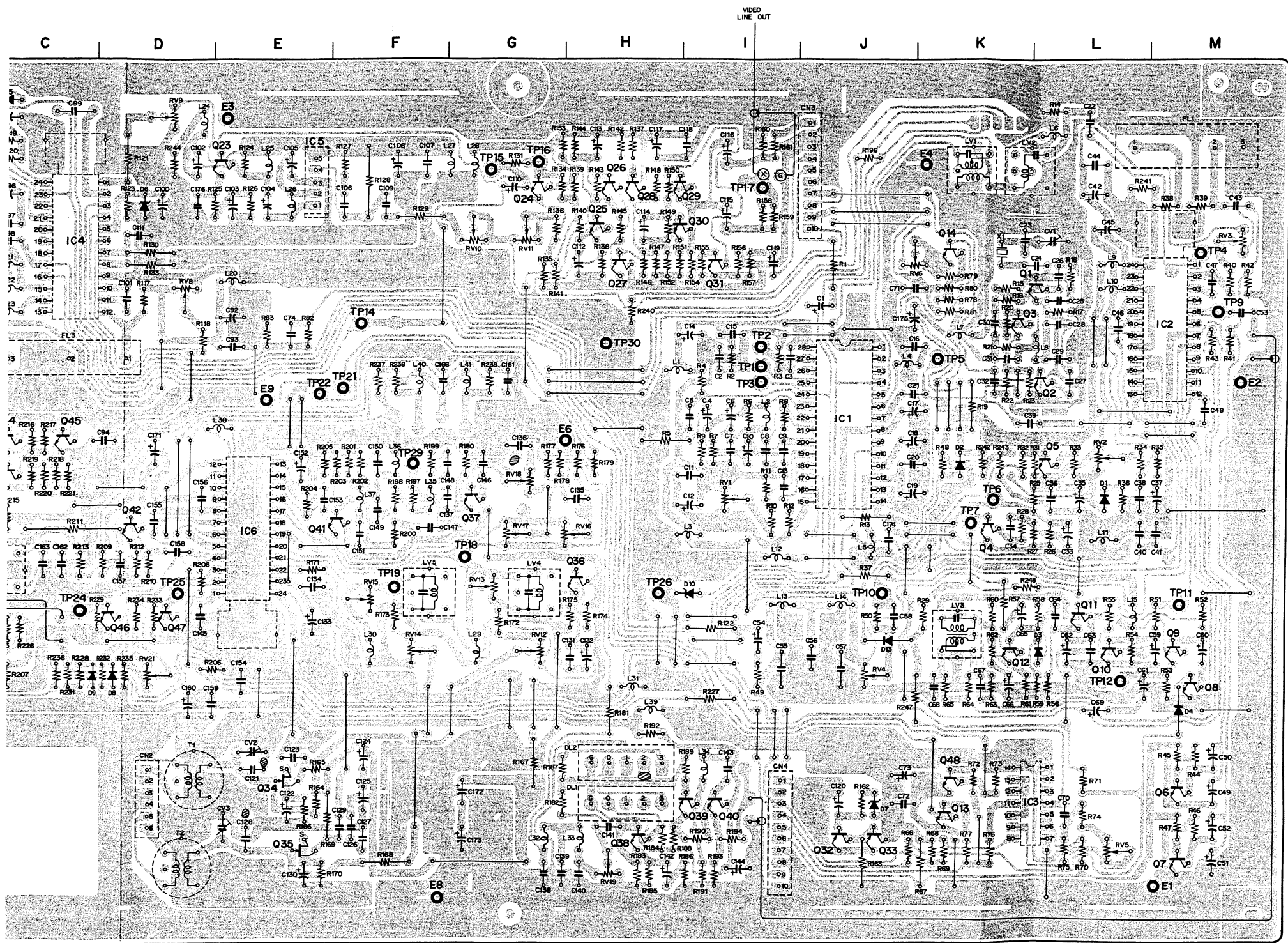
CN3	D - 7		Q31	I - 2
CN2	J - 1		Q32	J - 7
CN4	I - 7		Q33	J - 7
			Q34	E - 7
CV1	L - 2		Q35	E - 7
CV2	E - 6		Q36	H - 5
CV3	E - 7		Q37	G - 4
			Q38	H - 7
D1	L - 4		Q39	I - 7
D2	K - 4		Q40	I - 7
D3	L - 6		Q41	F - 4
D4	M - 6		Q42	D - 4
D5	C - 1		Q43	C - 4
D6	D - 2		Q44	C - 4
D7	J - 7		Q45	C - 4
D8	D - 6		Q46	D - 5
D9	C - 6		Q47	D - 5
D10	I - 5		Q48	K - 7
D12	A - 5			
D13	K - 5			
			RV1	I - 4
DL1	H - 7		RV2	L - 4
DL2	H - 6		RV3	M - 2
DL3	C - 5		RV4	J - 6
			RV5	L - 7
			RV6	J - 2
E1	M - 7		RV7	B - 2
E2	M - 3		RV8	D - 2
E3	E - 1		RV9	D - 1
E4	K - 1		RV10	G - 2
E5	E - 1		RV11	G - 2
E6	H - 4		RV12	G - 6
E7	B - 4		RV13	G - 5
E8	F - 7		RV14	F - 6
E9	E - 3		RV15	F - 5
			RV16	H - 4
FL1	M - 1		RV17	G - 5
FL2	A - 2		RV18	G - 4
FL3	C - 3		RV19	H - 7
			RV20	B - 5
			RV21	D - 6
IC1	J - 4		TP1	I - 3
IC2	M - 3		TP2	I - 3
IC3	K - 7		TP3	I - 3
IC4	C - 2		TP4	M - 2
IC5	E - 1		TP5	K - 3
IC6	E - 5		TP6	K - 4
IC8	B - 5		TP7	K - 4
			TP9	M - 3
LV1	K - 1		TP10	J - 5
LV2	K - 1		TP11	M - 5
LV3	G - 5		TP12	L - 6
LV4	G - 5		TP13	B - 1
LV5	F - 5		TP14	F - 3
			TP15	G - 1
Q1	K - 2		TP16	G - 1
Q2	L - 3		TP17	I - 2
Q3	K - 3		TP18	G - 5
Q4	K - 4		TP19	F - 5
Q5	L - 4		TP21	F - 3
Q6	M - 7		TP22	E - 3
Q7	M - 7		TP24	C - 5
Q8	M - 6		TP25	D - 5
Q9	M - 5		TP26	H - 5
Q10	L - 5		TP29	F - 4
Q11	L - 5			
Q12	K - 6			
Q13	K - 7			
Q14	K - 2		T1	D - 7
Q15	B - 1		T2	D - 7
Q16	B - 1			
Q17	B - 3	X1	K - 2	
Q18	B - 3			
Q19	A - 3			
Q20	B - 2			
Q21	B - 2			
Q22	A - 1			
Q23	A - 1			
Q24	G - 2			
Q25	H - 2			
Q26	H - 2			
Q27	H - 2			
Q28	H - 2			
Q29	H - 2			
Q30	H - 2			

VP-13 VP-13

VP-13
(VIDEO PB/DEMODULATOR)

S/N 10841 TO 18890 (AEP)
S/N 10111 TO 14460 (UK)
S/N 10001 TO 10300 (U/C)



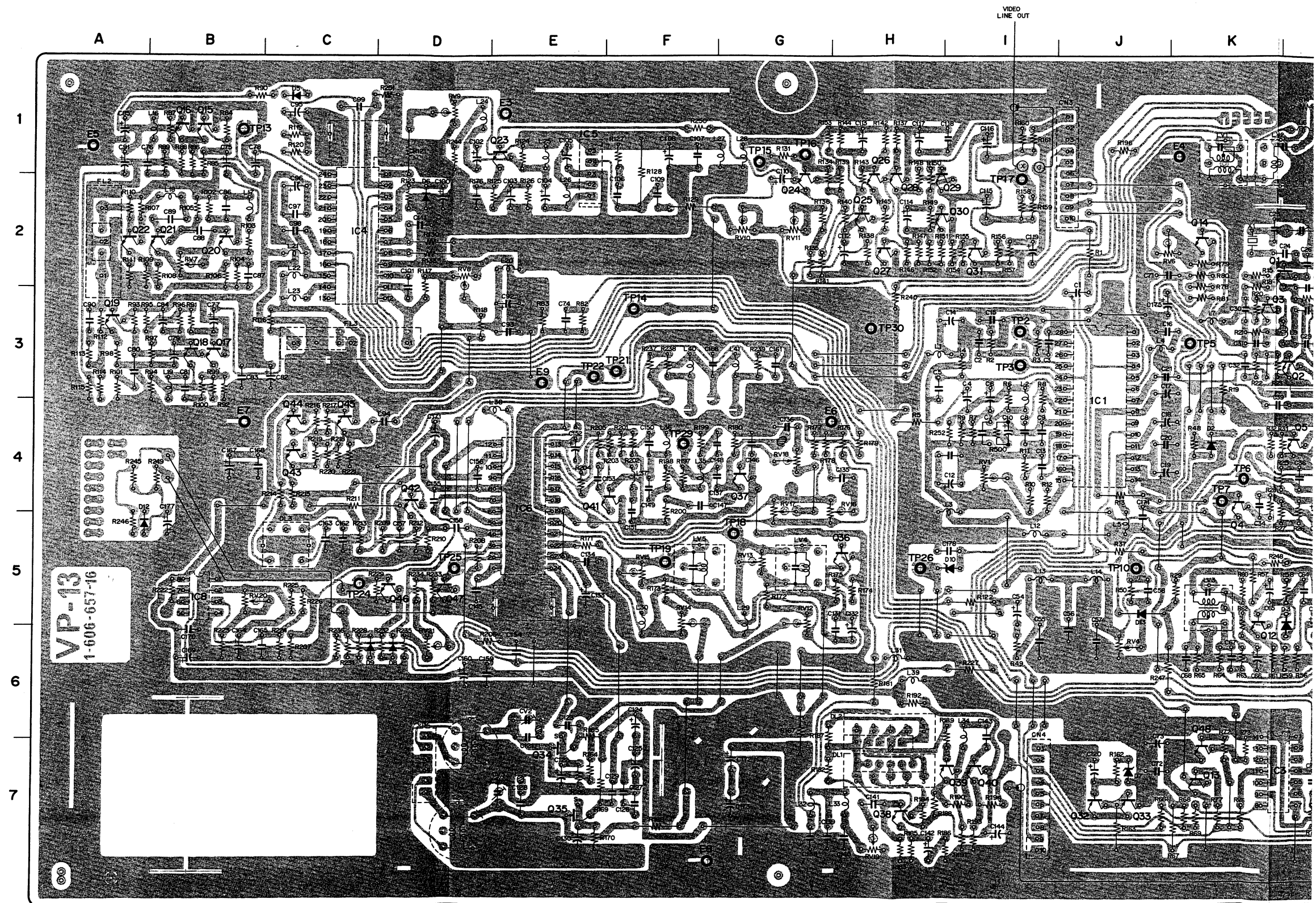


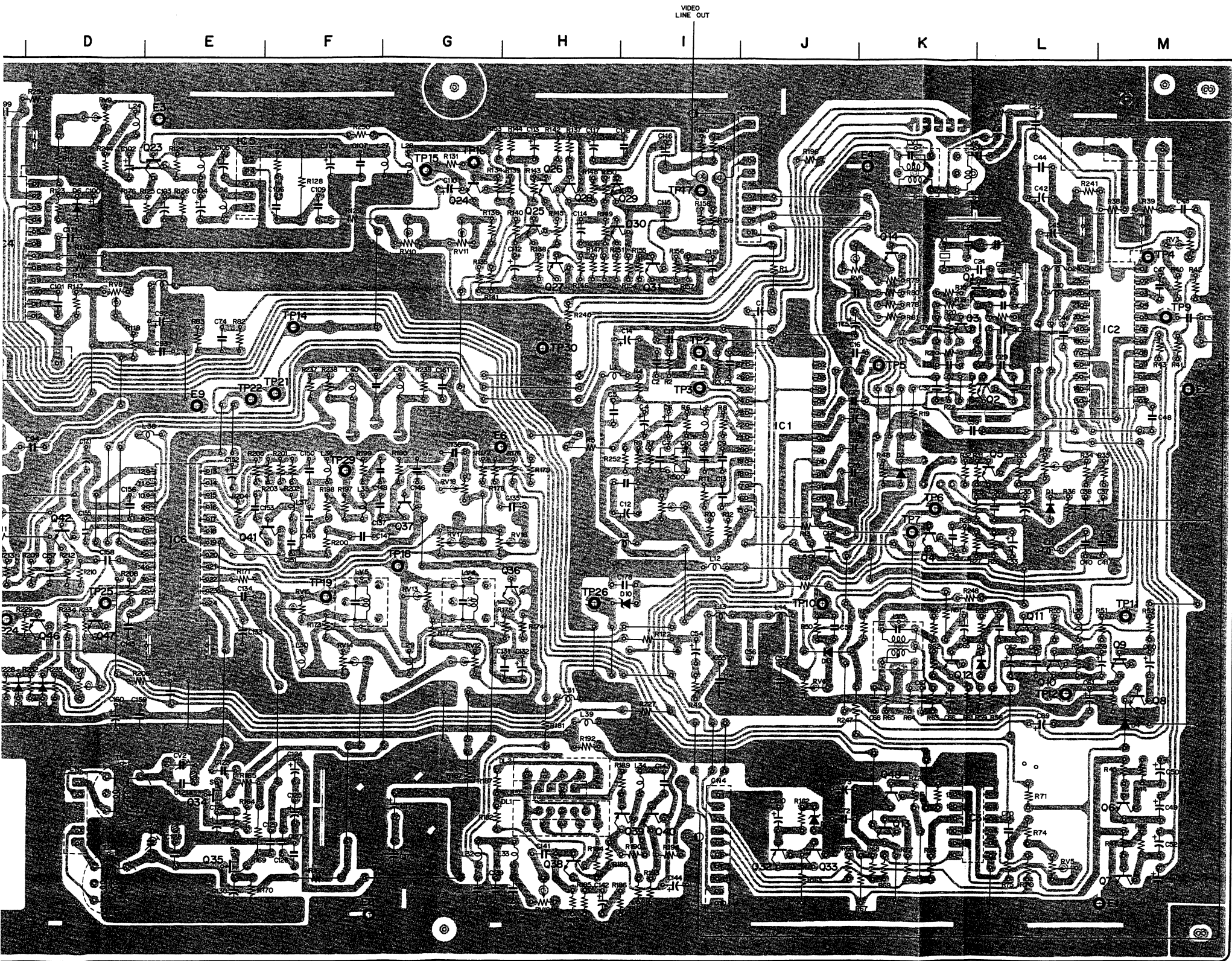
CN2	D-7	Q31	I-2
CN3	J-1	Q32	J-7
CN4	I-7	Q33	J-7
		Q34	E-7
CV1	L-2	Q35	E-7
CV2	E-6	Q36	H-5
CV3	E-7	Q37	G-4
		Q38	H-7
D1	L-4	Q39	I-7
D2	K-4	Q40	I-7
D3	L-5	Q41	F-4
D4	M-6	Q42	D-4
D5	C-1	Q43	C-4
D6	D-2	Q44	C-4
D7	J-7	Q45	C-4
D8	D-6	Q46	D-5
D9	C-6	Q47	D-5
D10	I-5	Q48	K-7
D12	A-5		
D13	J-5	RV1	I-4
		RV2	L-4
DL1	H-7	RV3	M-2
DL2	H-6	RV4	J-6
DL3	C-5	RV5	L-7
		RV6	J-2
E1	M-7	RV7	B-2
E2	M-3	RV8	D-2
E3	E-1	RV9	D-1
E4	K-1	RV10	G-2
E5	A-1	RV11	G-2
E7	B-4	RV12	G-5
E8	F-7	RV13	G-5
E9	E-3	RV14	F-5
		RV15	F-5
FL1	M-1	RV16	H-5
FL2	A-2	RV17	G-5
FL3	C-3	RV18	G-4
		RV19	H-7
		RV20	B-5
		RV21	D-6
LV1	K-1		
LV2	K-1		
LV3	K-5		
LV4	G-5		
LV5	F-5		
		T1	D-7
		T2	D-7
Q1	L-2	TP1	I-2
Q2	L-3	TP2	I-2
Q3	K-3	TP3	I-2
Q4	K-4	TP4	M-2
Q5	L-4	TP5	K-3
Q6	M-7	TP6	K-4
Q7	M-7	TP7	K-4
Q8	M-6	TP8	M-3
Q9	M-5	TP9	J-5
Q10	L-6	TP10	M-5
Q11	L-5	TP11	L-6
Q12	K-6	TP12	B-1
Q13	K-7	TP13	F-3
Q14	K-2	TP14	G-1
Q15	B-1	TP15	G-1
Q16	B-1	TP16	I-2
Q17	B-3	TP17	F-5
Q18	B-3	TP18	F-5
Q19	A-3	TP19	F-3
Q20	B-2	TP20	E-3
Q21	B-2	TP21	C-5
Q22	A-2	TP22	D-5
Q23	E-1	TP23	H-5
Q24	G-2	TP24	F-4
Q25	H-2	TP25	H-3
Q26	H-2		
Q27	H-2	X1	K-2
Q28	H-2		
Q29	H-2		
Q30	H-2		

VP-13-SOLDERING SIDE-

VP-13 (VIDEO DEMODULATOR)

S/N 18891 AND LATER (AEP)
S/N 14461 AND LATER (UK)
S/N 10301 AND LATER (U/C)



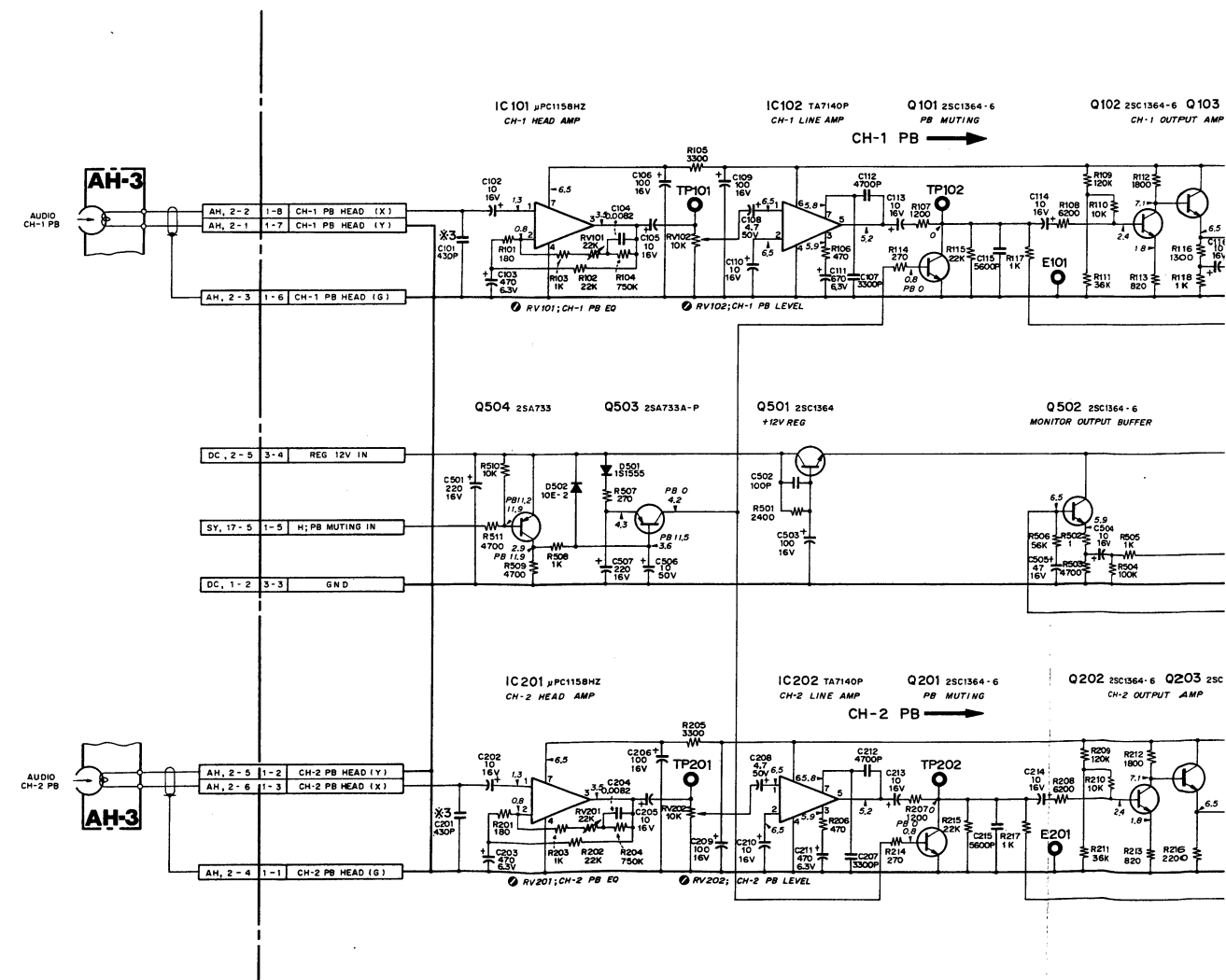
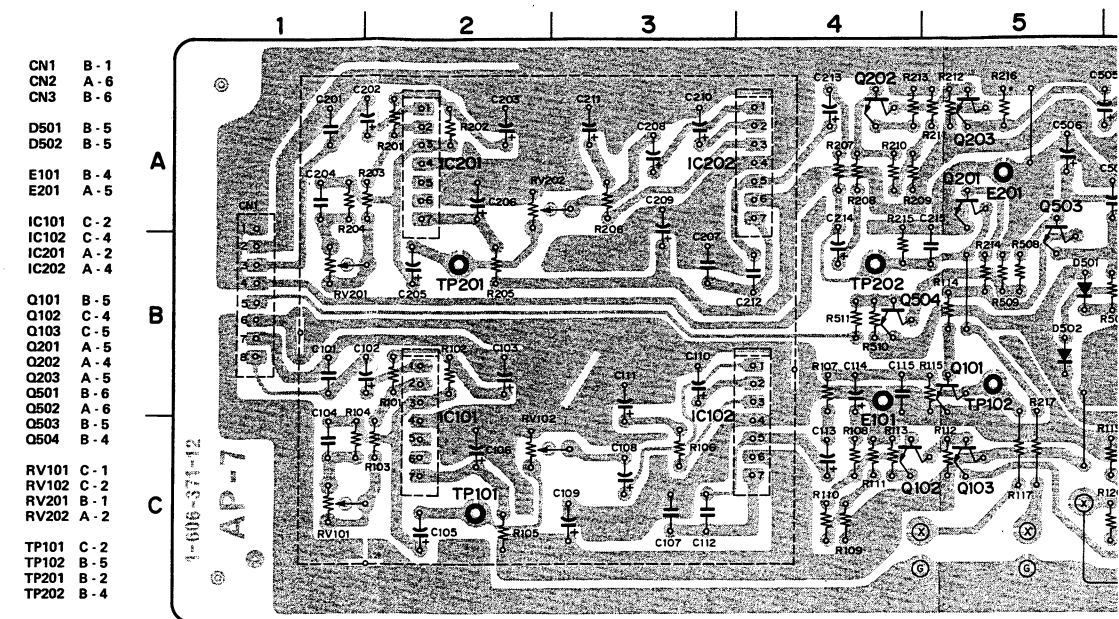
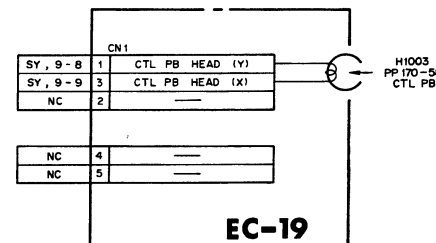
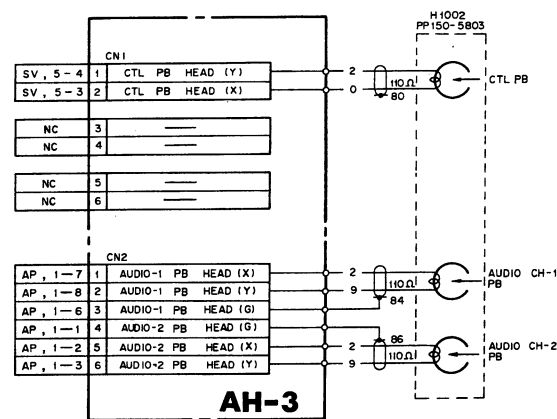
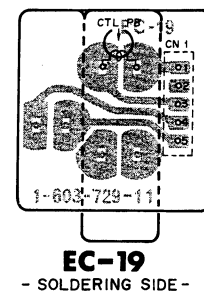
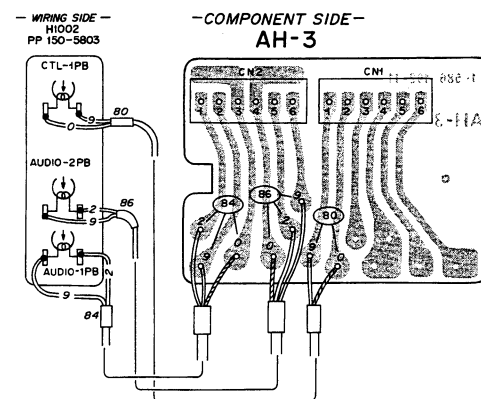


CN2	D-7	Q31	I-2
CN3	J-1	Q32	J-7
CN4	I-7	Q33	J-7
		Q34	E-7
CV1	L-2	Q35	E-7
CV2	E-6	Q36	H-5
CV3	E-7	Q37	G-4
		Q38	H-7
		Q39	I-7
D1	L-4	Q40	I-7
D2	K-4	Q41	F-4
D3	L-5	Q42	D-4
D4	M-6	Q43	C-4
D5	C-1	Q44	C-4
D6	D-2	Q45	C-4
D7	J-7	Q46	D-5
D8	D-6	Q47	D-5
D9	C-6	Q48	K-7
D10	I-5		
D12	A-5	RV1	I-4
D13	J-5	RV2	L-4
		RV3	M-2
DL1	H-7	RV4	J-6
DL2	H-6	RV5	L-7
DL3	C-5	RV6	J-2
		RV7	B-2
E1	M-7	RV8	D-2
E2	M-3	RV9	D-1
E3	E-1	RV10	G-2
E4	K-1	RV11	G-2
E5	A-1	RV12	G-5
E7	B-4	RV13	G-5
E8	F-7	RV14	F-5
E9	E-3	RV15	F-5
		RV16	H-5
FL1	M-1	RV17	G-5
FL2	A-2	RV18	G-4
FL3	C-3	RV19	H-7
		RV20	B-5
LV1	K-1	RV21	D-6
LV2	K-1		
LV3	K-5	T1	D-7
LV4	G-5	T2	D-7
LV5	F-5		
Q1	L-2	TP2	I-2
Q2	L-3	TP3	I-2
Q3	K-3	TP4	M-2
Q4	K-4	TP5	K-3
Q5	L-4	TP6	K-4
Q6	M-7	TP7	K-4
Q7	M-7	TP9	M-3
Q8	M-6	TP10	J-5
Q9	M-5	TP11	M-5
Q10	L-6	TP12	L-6
Q11	L-5	TP13	B-1
Q12	K-6	TP14	F-3
Q13	K-7	TP15	G-1
Q14	K-2	TP16	G-1
Q15	B-1	TP17	I-2
Q16	B-1	TP18	G-5
Q17	B-3	TP19	F-5
Q18	B-3	TP21	F-3
Q19	A-3	TP22	E-3
Q20	B-2	TP24	C-5
Q21	B-2	TP25	D-5
Q22	A-2	TP26	H-5
Q23	E-1	TP29	F-4
Q24	G-2	TP30	H-3
Q25	H-2		
Q26	H-2	X1	K-2
Q27	H-2		
Q28	H-2		
Q29	H-2		
Q30	H-2		

VP-13-SOLDERING SIDE-
1-606-657-16
VP-5030

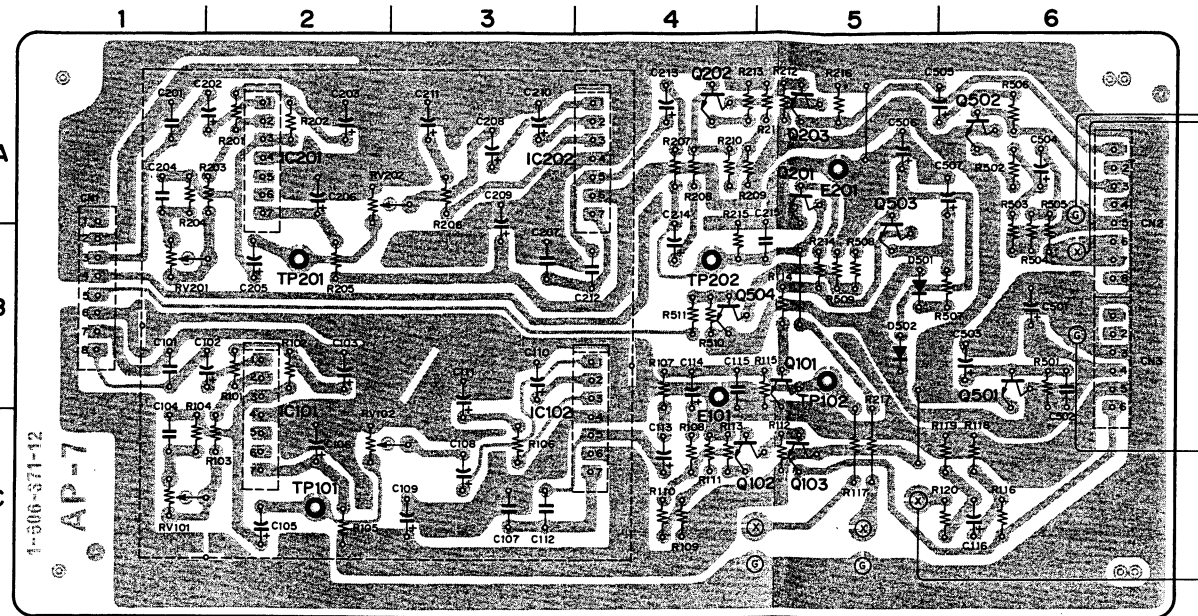
AH-3 (AUDIO PB HEAD)
EC-19 (CTL PB HEAD)

AP-7
(AUDIO PB AMPLIFIER)



AP-7
(AUDIO PB AMPLIFIER)

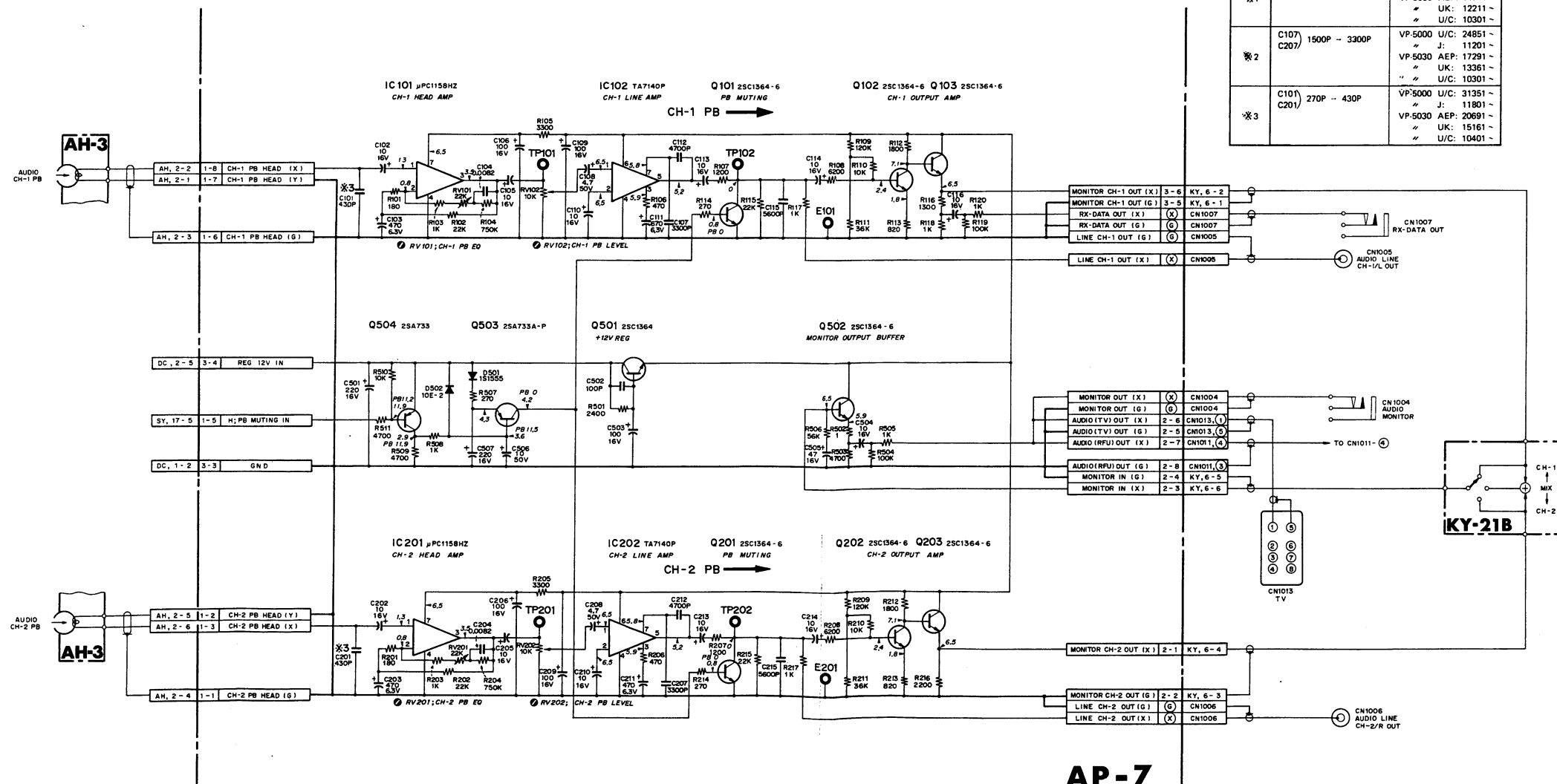
CN1 B-1
CN2 A-6
CN3 B-6
D501 B-5
D502 B-5
E101 B-4
E201 A-5
IC101 C-2
IC102 C-4
IC201 A-2
IC202 A-4
Q101 B-5
Q102 C-4
Q103 C-5
Q201 A-5
Q202 A-4
Q203 A-5
Q501 B-6
Q502 A-6
Q503 B-5
Q504 B-4
RV101 C-1
RV102 C-2
RV201 B-1
RV202 A-2
TP101 C-2
TP102 B-5
TP201 B-2
TP202 B-4



AP-7 - SOLDERING SIDE -

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
*1	R105/2200 - 3300	VP-5000 U/C: 19351 ~ J: 10901 ~ VP-5030 AEP: 14741 ~ UK: 12211 ~ U/C: 10301 ~
*2	C107/1500P - 3300P	VP-5000 U/C: 24851 ~ J: 11201 ~ VP-5030 AEP: 17291 ~ UK: 13361 ~ U/C: 10301 ~
*3	C101/270P - 430P	VP-5000 U/C: 31351 ~ J: 11801 ~ VP-5030 AEP: 20691 ~ UK: 15161 ~ U/C: 10401 ~



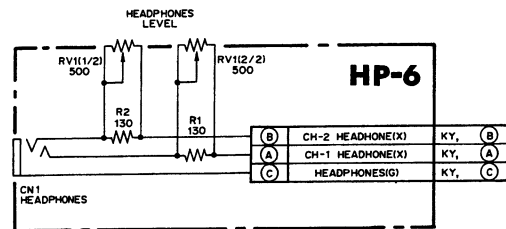
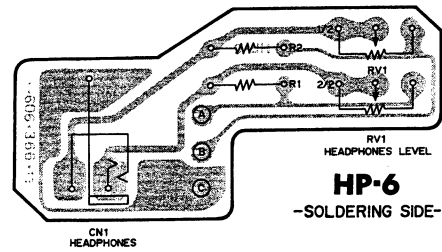
AP-7

HP-6

DR-17B

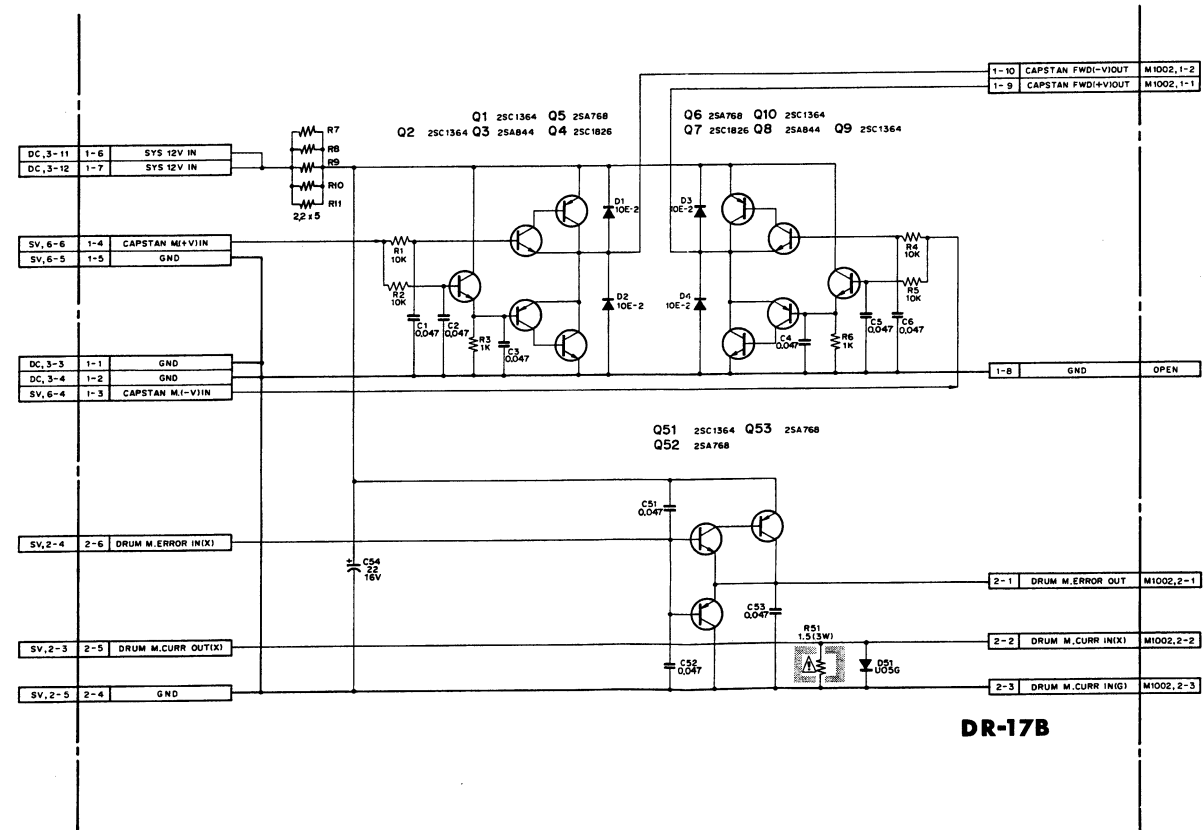
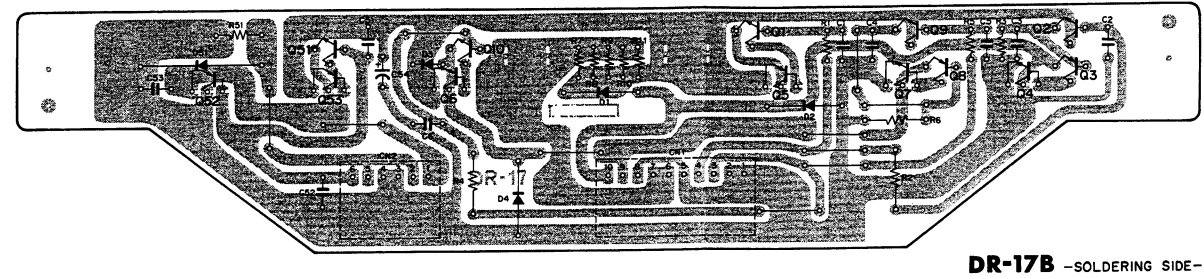
HP-6

(HEADPHONES JACK)



DR-17B

(CAPSTAN/DRUM DRIVER)



NOTE: The shaded and -marked components are critical to safety. Replace only with same components as specified.

]

:-

1-2
1-1

□

2-1

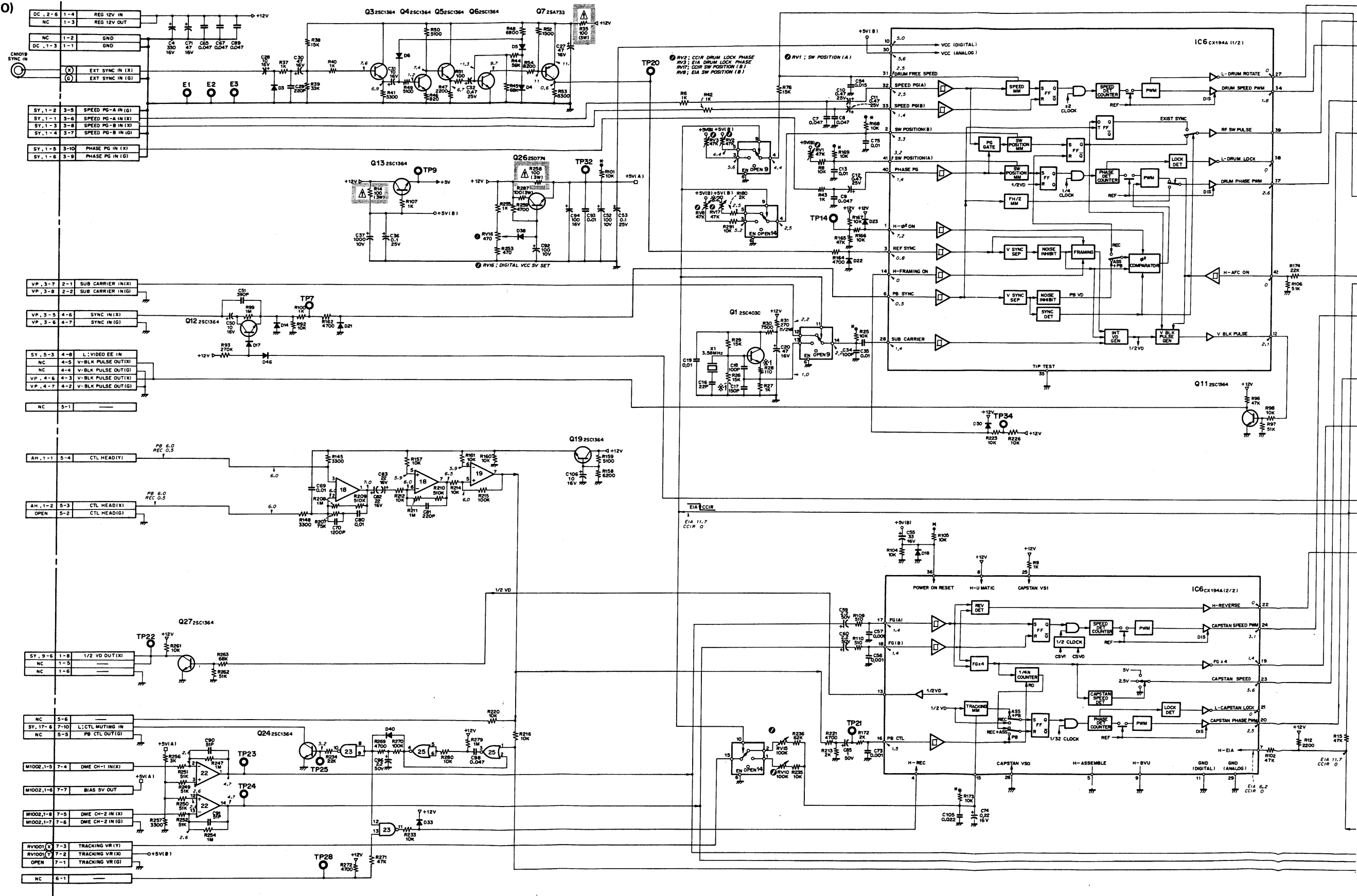
2-2

2-3

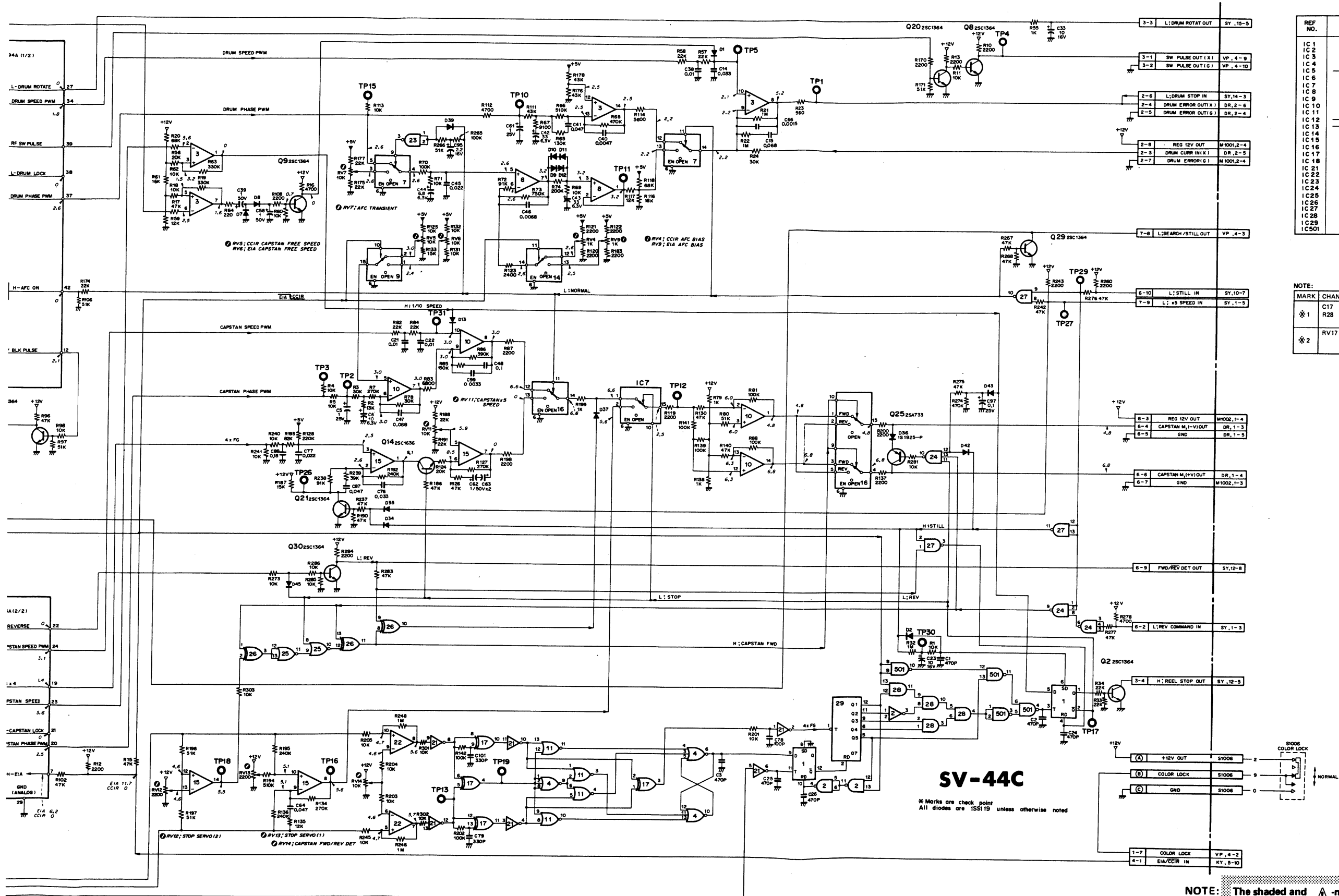
ritical
1.

SV-44C SV-44C

SV-44C (DRUM/CAPSTAN PWM SERVO)



SV-44C SV-44C



REF. NO.	TYPE	12V PIN	GND PIN
IC 1	TC4013BP	14	7
IC 2	TC4011BP	14	7
IC 3	μPC324C	14	11
IC 4	TC4025BP	14	7
IC 5			
IC 6	CX194A		
IC 7	TC4053BP	16	8
IC 8	μPC358C	8	4
IC 9	TC4053BP	16	8
IC 10	μPC324C	14	11
IC 11	TC4001BP	14	7
IC 12			
IC 13			
IC 14	TC4053BP	16	8
IC 15	μPC324C	14	11
IC 16	TC4053BP	16	8
IC 17	TC4030BP	14	7
IC 18	μPC358C-D	8	4
IC 21	MC145584BCP	14	7
IC 22	μPC324C	14	11
IC 23	TC4011BP	14	7
IC 24	TC4023BP	14	7
IC 25	TC4001BP	14	7
IC 26	TC4030BP	14	7
IC 27	TC4011BP	14	7
IC 28	TC4053BP	14	7
IC 29	TC4024BP	14	7
IC 501	TC4011BP	14	7

MARK	CHANGE INFORMATION	SERIAL NO.
*1	C17 100P → 150P R28 270 → 110	AEP: 12641 ~ UK: 10911 ~ U/C: 10301 ~
*2	RV17 47K ADDED	AEP: 13641 ~ UK: 11711 ~ U/C: 10301 ~

SV-44C

* Marks are check point
All diodes are 1SS119 unless otherwise noted

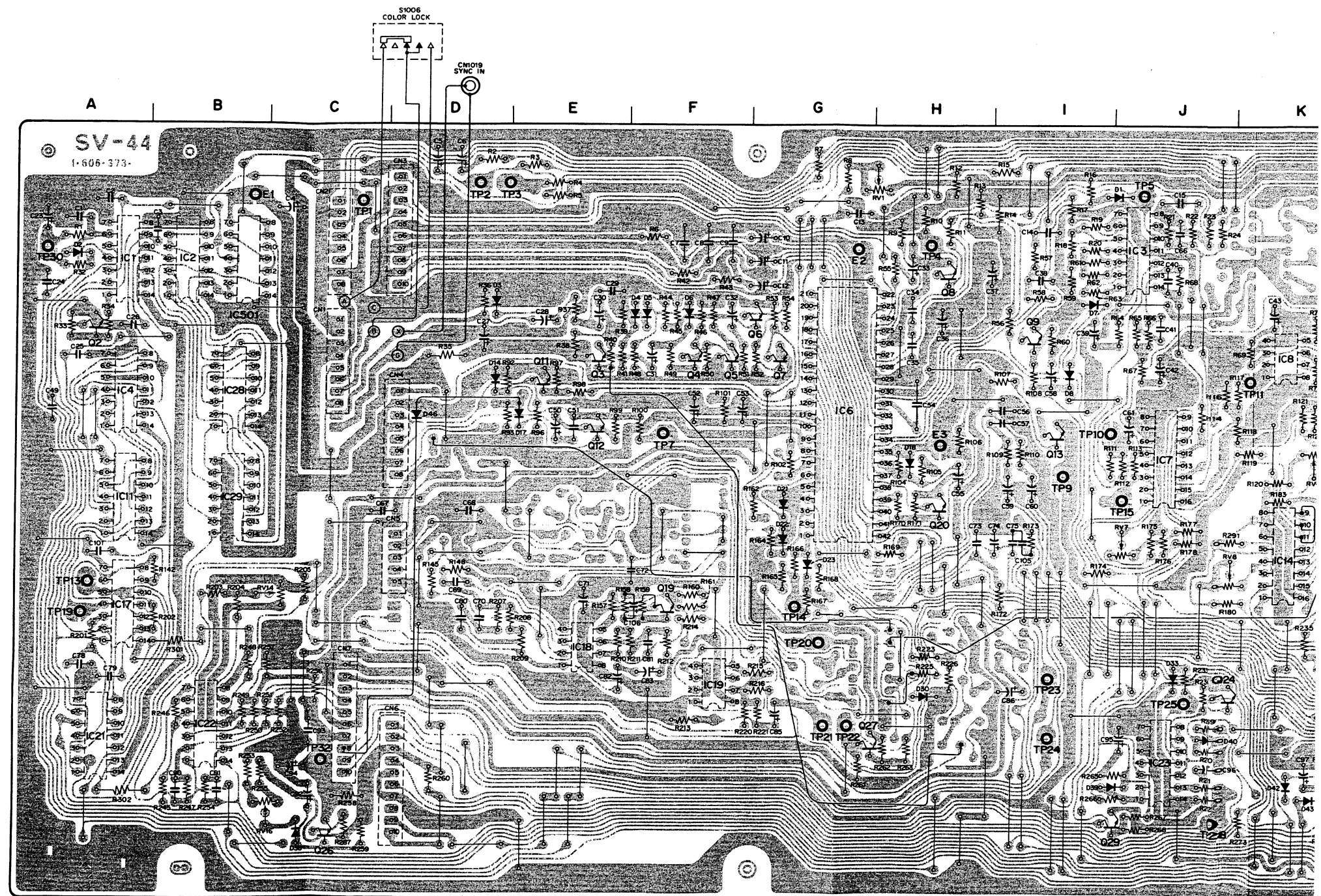
NOTE: The shaded and -marked components are critical to safety.
Replace only with same components as specified.

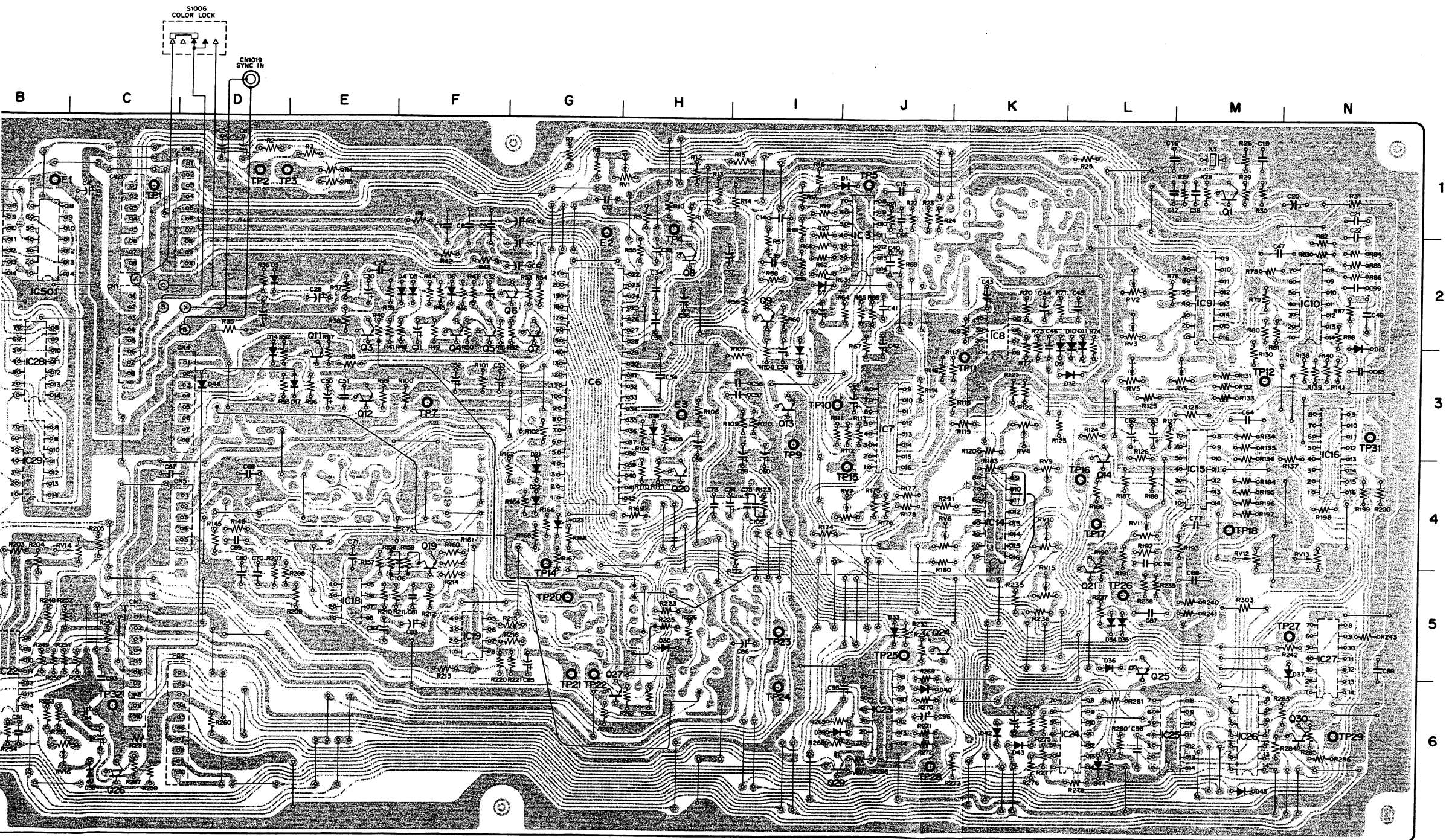
SV-44C SV-44C

SV-44C
(DRUM/CAPSTAN PWM SERVO)

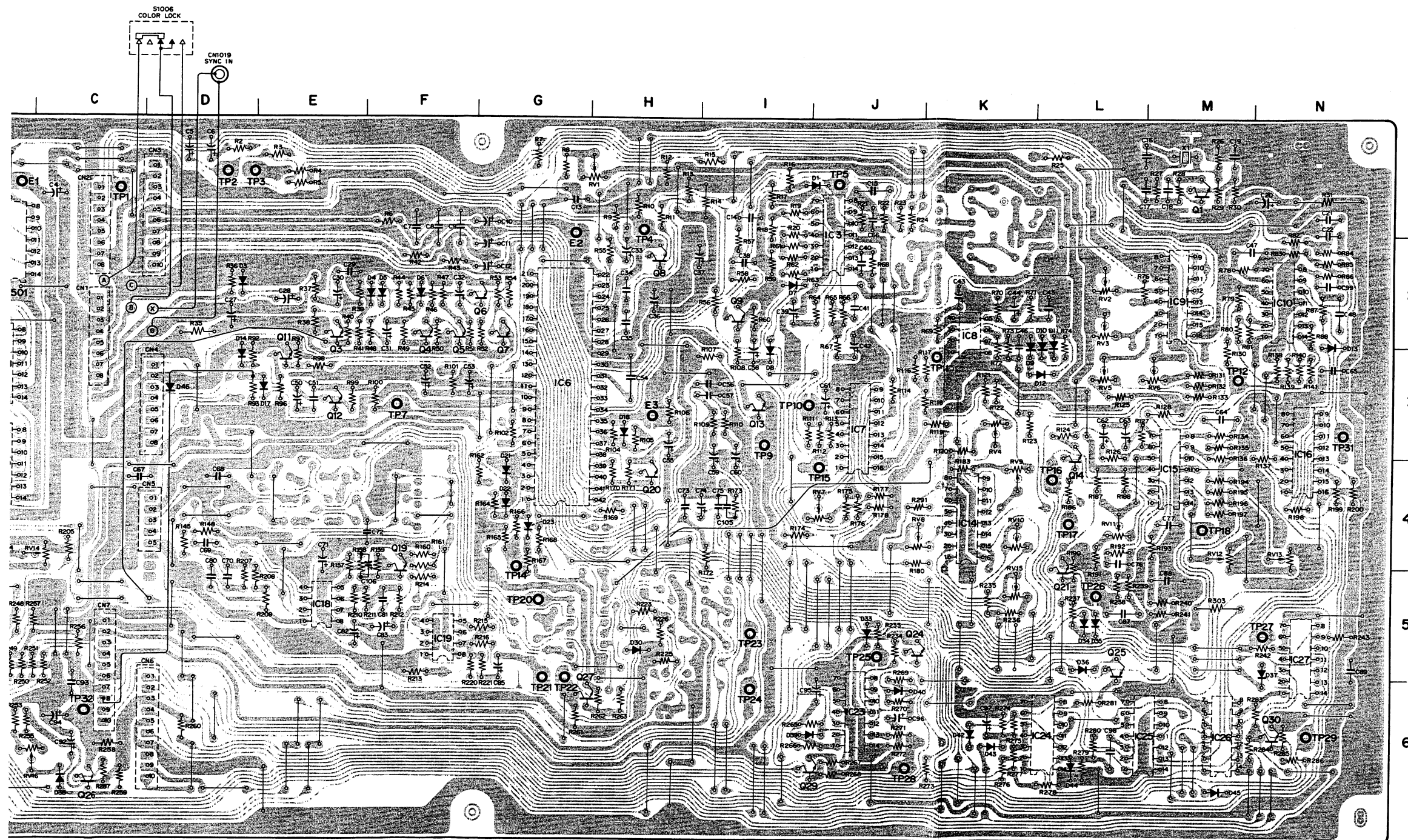
S/N UP TO 11840 (AEP)
S/N UP TO 10410 (UK)

CN1	C-2	IC1	A-2	TP1	C-1
CN2	C-1	IC2	B-2	TP2	D-1
CN3	D-1	IC3	J-1	TP3	D-1
CN4	D-3	IC4	A-3	TP4	H-1
CN5	D-4	IC6	G-3	TP5	J-1
CN6	D-6	IC7	J-3	TP7	F-3
CN7	C-5	IC8	K-2	TP9	I-3
		IC9	M-2	TP10	I-3
D1	J-1	IC10	N-2	TP11	K-3
D2	A-1	IC11	A-4	TP12	M-3
D3	D-2	IC14	K-4	TP13	A-4
D4	F-2	IC15	M-4	TP14	G-4
D5	F-2	IC16	N-3	TP15	J-4
D6	F-2	IC17	A-4	TP16	L-4
D7	I-2	IC18	E-5	TP17	L-4
D8	I-3	IC21	A-6	TP18	M-4
D9	K-2	IC22	B-5	TP19	A-5
D10	L-2	IC23	J-6	TP20	G-5
D11	L-2	IC24	L-6	TP21	G-5
D12	L-3	IC25	M-6	TP22	G-5
D13	N-2	IC26	M-6	TP23	I-5
D14	D-3	IC27	N-5	TP24	I-6
D17	E-3	IC28	B-3	TP25	J-5
D18	H-3	IC29	B-4	TP26	L-5
D21	G-4	IC501	B-2	TP27	N-5
D22	G-4			TP28	J-6
D23	G-4	Q1	M-1	TP29	N-6
D30	H-5	Q2	A-2	TP30	A-1
D33	J-5	Q3	E-2	TP31	N-3
D34	L-5	Q4	F-2	TP32	C-6
D35	L-5	Q5	F-2		
D36	L-5	Q6	G-2	RV1	H-1
D37	N-5	Q7	G-2	RV2	L-2
D38	C-6	Q8	H-2	RV3	L-2
D39	J-6	Q9	I-2	RV4	K-3
D40	J-6	Q11	E-3	RV5	L-3
D42	K-6	Q12	E-3	RV6	M-3
D43	K-6	Q13	I-3	RV7	J-4
D44	L-6	Q14	L-3	RV8	J-4
D45	M-6	Q19	F-4	RV9	K-4
D46	D-3	Q20	H-4	RV10	K-4
		Q21	L-4	RV11	L-4
E1	B-1	Q24	J-5	RV12	M-4
E2	G-1	Q25	L-5	RV13	N-4
E3	H-3	Q26	C-6	RV14	C-4
		Q27	H-6	RV15	K-5
		Q29	J-6	RV16	C-6
		Q30	N-6		
				X1	M-1





SV-44C -SOLDERING SIDE-



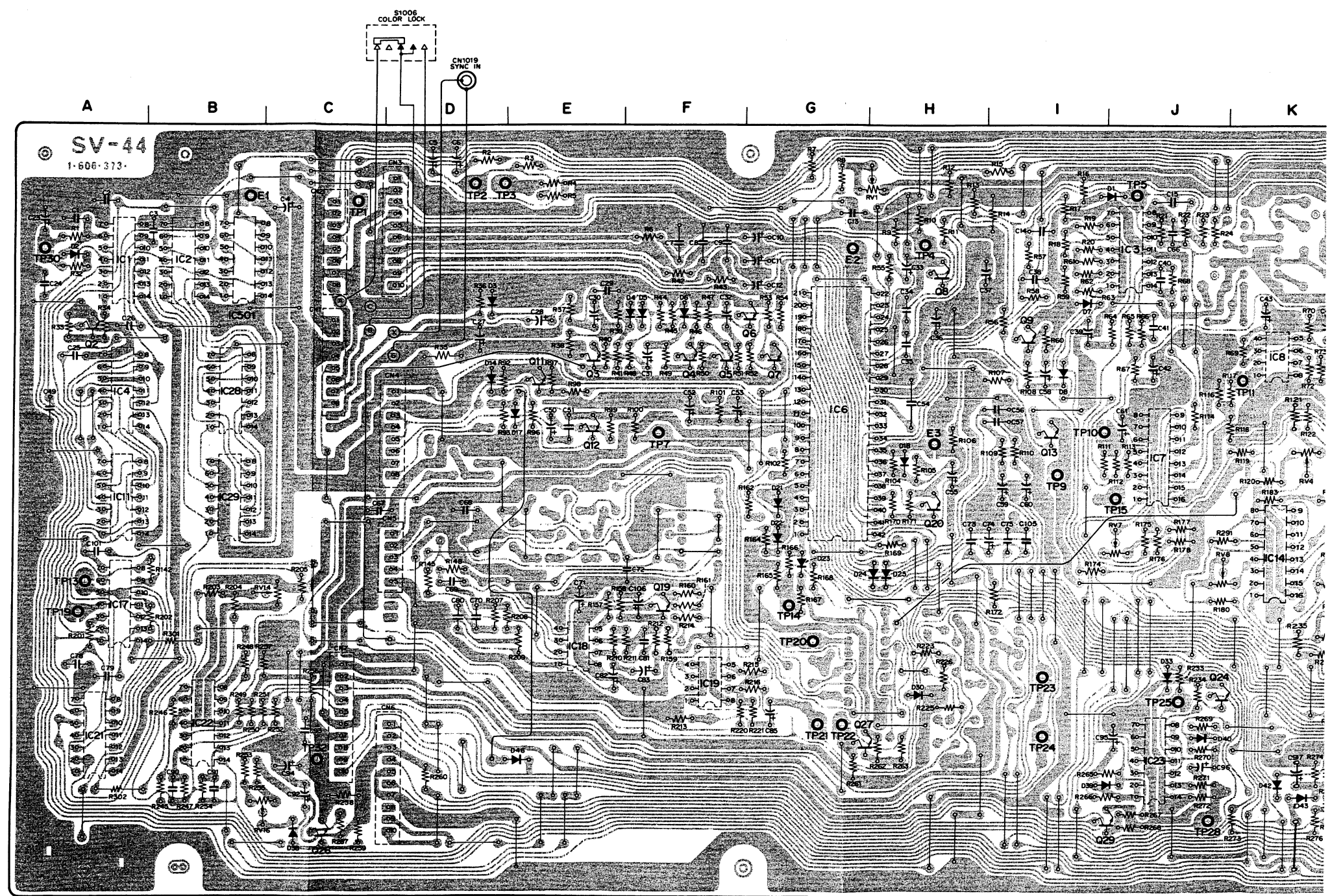
SV-44C - SOLDERING SIDE-

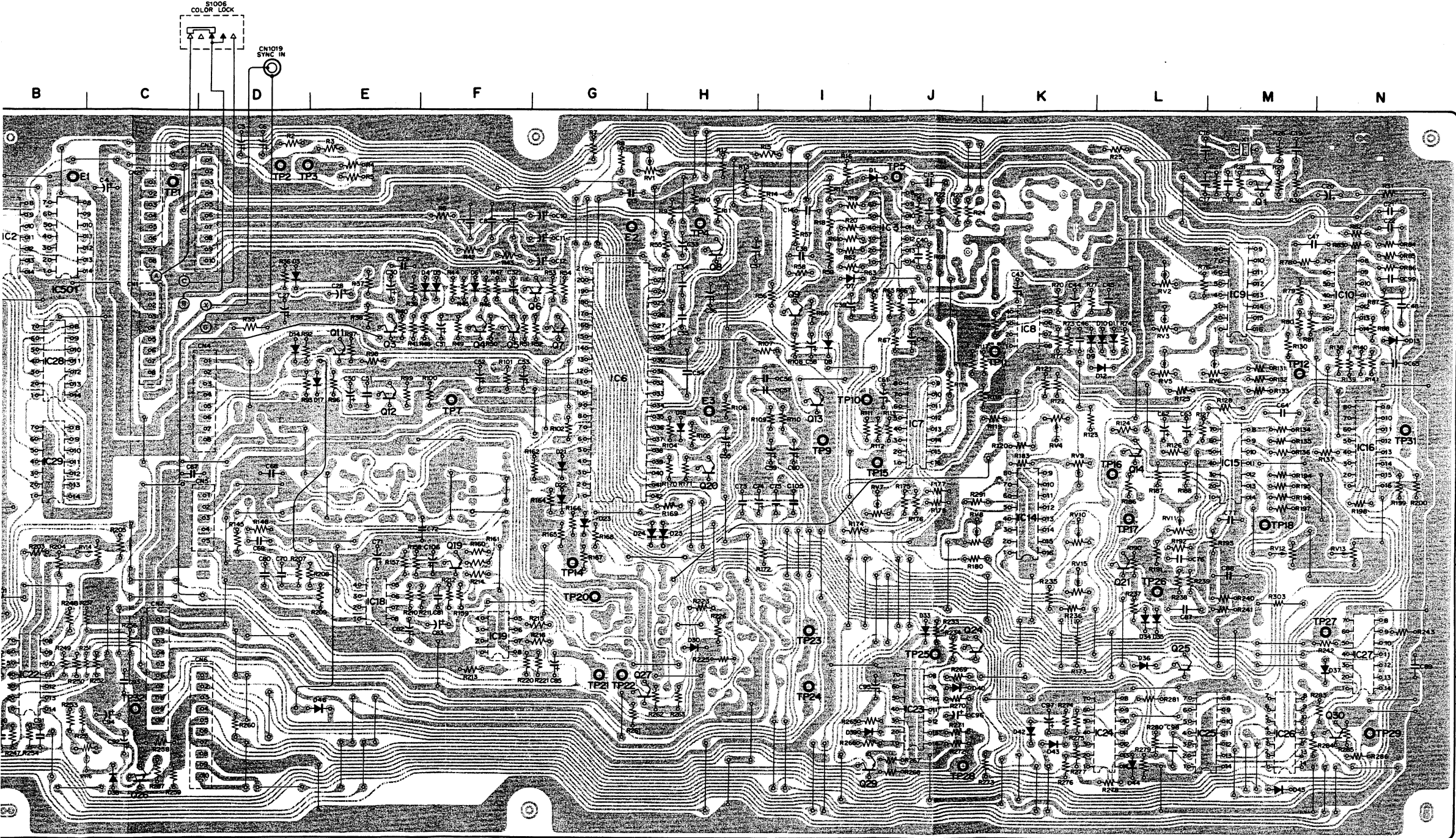
SV-44C SV-44C

SV-44C
(DRUM/CAPSTAN PWM SERVO)

S/N 11841 TO 13640 (AEP)
S/N 10411 TO 11710 (UK)
S/N 10001 TO 10300 (U/C)

CN1	C-2	IC1	A-2	TP1	C-1
CN2	C-1	IC2	B-2	TP2	D-1
CN3	D-1	IC3	J-1	TP3	D-1
CN4	D-3	IC4	A-3	TP4	H-1
CN5	D-4	IC6	G-3	TP5	J-1
CN6	D-6	IC7	J-3	TP7	F-3
CN7	C-5	IC8	K-2	TP9	I-3
		IC9	M-2	TP10	I-3
D1	J-1	IC10	N-2	TP11	K-3
D2	A-1	IC11	A-4	TP12	M-3
D3	D-2	IC14	K-4	TP13	A-4
D4	F-2	IC15	M-4	TP14	G-4
D5	F-2	IC16	N-3	TP15	J-4
D6	F-2	IC17	A-4	TP16	L-4
D7	I-2	IC18	E-5	TP17	L-4
D8	I-3	IC21	A-6	TP18	M-4
D9	K-2	IC22	B-5	TP19	A-5
D10	L-2	IC23	J-6	TP20	G-5
D11	L-2	IC24	L-6	TP21	G-5
D12	L-3	IC25	M-6	TP22	G-5
D13	N-2	IC26	M-6	TP23	I-5
D14	D-3	IC27	N-5	TP24	I-6
D17	E-3	IC28	B-3	TP25	J-5
D18	H-3	IC29	B-4	TP26	L-5
D21	G-4	IC501	B-2	TP27	N-5
D22	G-4			TP28	J-6
D23	G-4	Q1	M-1	TP29	N-6
D30	H-5	Q2	A-2	TP30	A-1
D33	J-5	Q3	E-2	TP31	N-3
D34	L-5	Q4	F-2	TP32	C-6
D35	L-5	Q5	F-2		
D36	L-5	Q6	G-2	RV1	H-1
D37	N-5	Q7	G-2	RV2	L-2
D38	C-6	Q8	H-2	RV3	L-2
D39	J-6	Q9	I-2	RV4	K-3
D40	J-6	Q11	E-3	RV5	L-3
D42	K-6	Q12	E-3	RV6	M-3
D43	K-6	Q13	I-3	RV7	J-4
D44	L-6	Q14	L-3	RV8	J-4
D45	M-6	Q19	F-4	RV9	K-4
D46	E-6	Q20	H-4	RV10	K-4
		Q21	L-4	RV11	L-4
E1	B-1	Q24	J-5	RV12	M-4
E2	G-1	Q25	L-5	RV13	N-4
E3	H-3	Q26	C-6	RV14	C-4
		Q27	H-6	RV15	K-5
		Q29	J-6	RV16	C-6
		Q30	N-6		
				X1	M-1





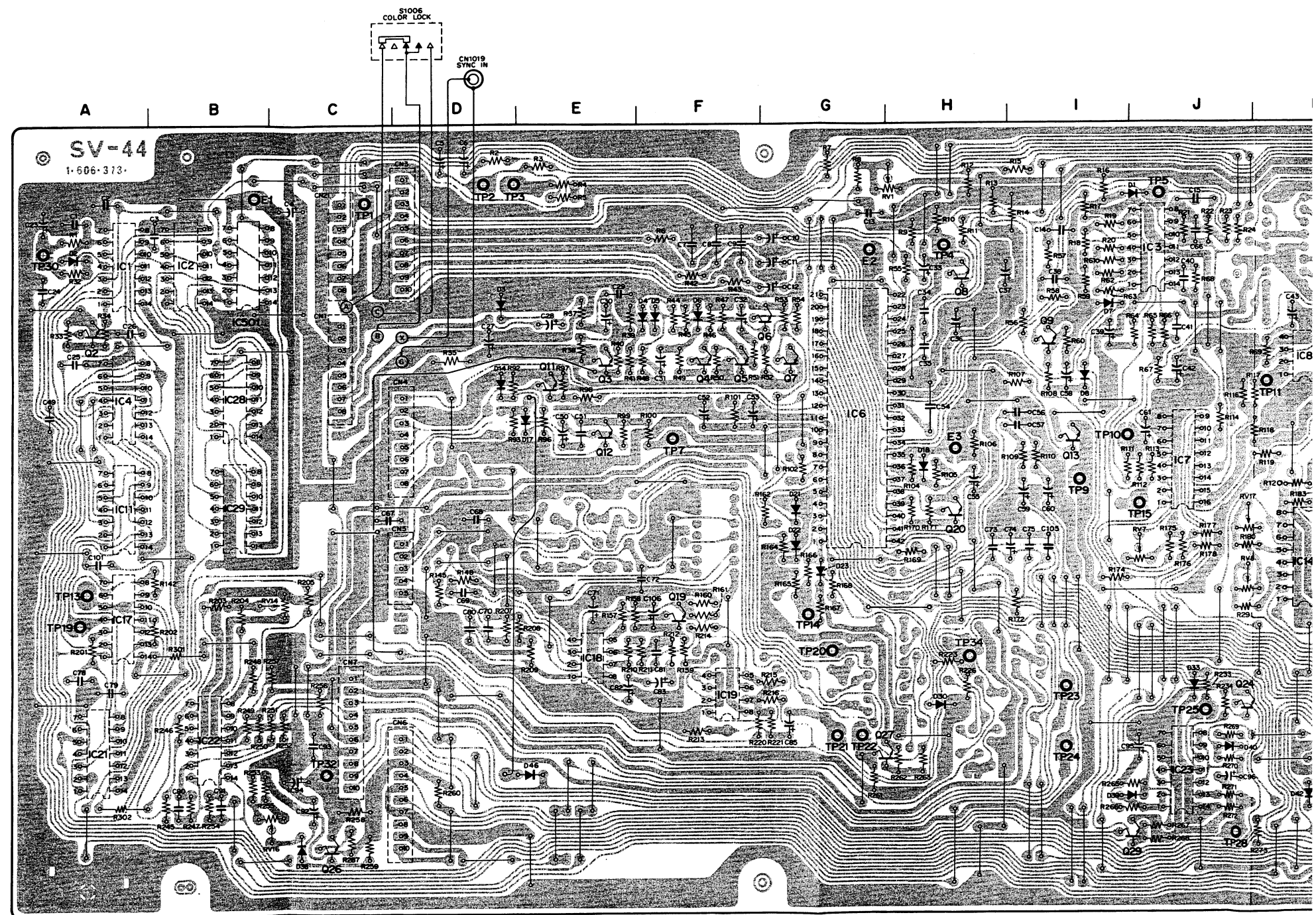
SV-44C -SOLDERING SIDE-

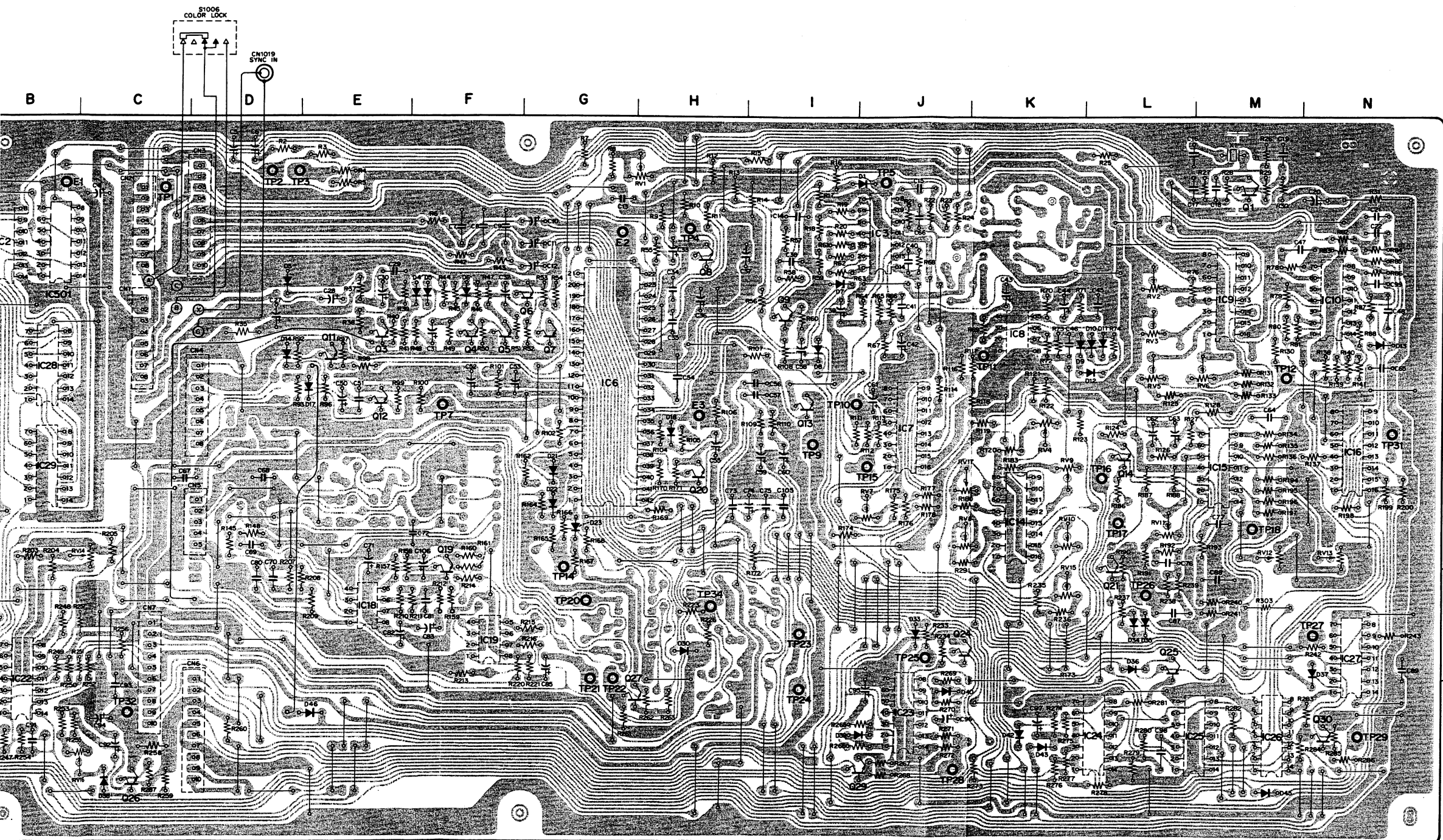
SV-44C SV-44C

SV-44C
(DRUM/CAPSTAN PWM SERVO)

S/N 13641 AND LATER (AEP)
S/N 11711 AND LATER (UK)
S/N 10301 AND LATER (U/C)

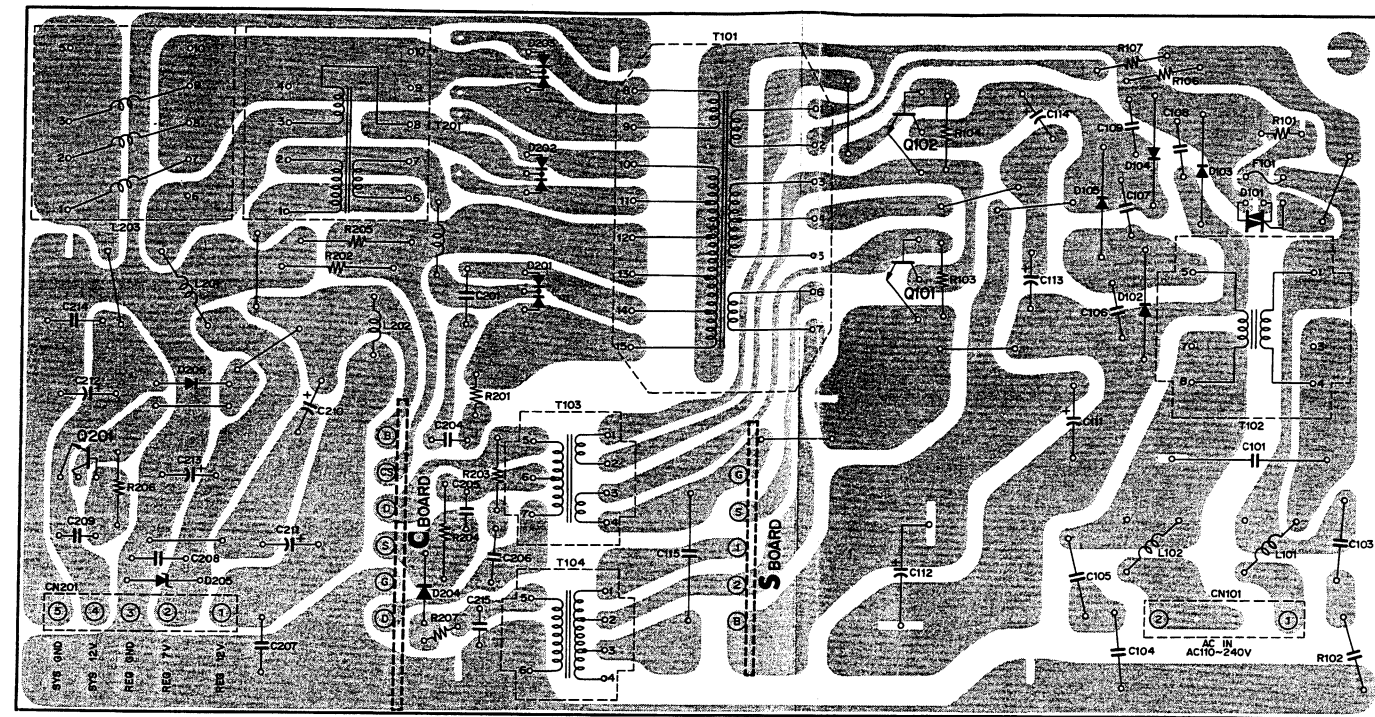
CN1	C-2	IC1	A-2	TP1	C-1
CN2	C-1	IC2	B-2	TP2	D-1
CN3	D-1	IC3	J-1	TP3	D-1
CN4	D-3	IC4	A-3	TP4	H-1
CN5	D-4	IC6	G-3	TP5	J-1
CN6	D-6	IC7	J-3	TP7	F-3
CN7	C-5	IC8	K-2	TP9	I-3
		IC9	M-2	TP10	I-3
D1	J-1	IC10	N-2	TP11	K-3
D2	A-1	IC11	A-4	TP12	M-3
D3	D-2	IC14	K-4	TP13	A-4
D4	F-2	IC15	M-4	TP14	G-4
D5	F-2	IC16	N-3	TP15	J-4
D6	F-2	IC17	A-4	TP16	L-4
D7	I-2	IC18	E-5	TP17	L-4
D8	I-3	IC21	A-6	TP18	M-4
D9	K-2	IC22	B-5	TP19	A-5
D10	L-2	IC23	J-6	TP20	G-5
D11	L-2	IC24	L-6	TP21	G-5
D12	L-3	IC25	M-6	TP22	G-5
D13	N-2	IC26	M-6	TP23	I-5
D14	D-3	IC27	N-5	TP24	I-6
D17	E-3	IC28	B-3	TP25	J-5
D18	H-3	IC29	B-4	TP26	L-5
D21	G-4	IC501	B-2	TP27	N-5
D22	G-4			TP28	J-6
D23	G-4	Q1	M-1	TP29	N-6
D30	H-5	Q2	A-2	TP30	A-1
D33	J-5	Q3	E-2	TP31	N-3
D34	L-5	Q4	F-2	TP32	C-6
D35	L-5	Q5	F-2	TP34	H-5
D36	L-5	Q6	G-2		
D37	N-5	Q7	G-2	RV1	H-1
D38	C-6	Q8	H-2	RV2	L-2
D39	J-6	Q9	I-2	RV3	L-2
D40	J-6	Q11	E-3	RV4	K-3
D42	K-6	Q12	E-3	RV5	L-3
D43	K-6	Q13	I-3	RV6	M-3
D45	M-6	Q14	L-3	RV7	J-4
D46	E-6	Q19	F-4	RV8	J-4
		Q20	H-4	RV9	K-4
E1	B-1	Q21	L-4	RV10	K-4
E2	G-1	Q24	J-5	RV11	L-4
E3	H-3	Q25	L-5	RV12	M-4
		Q26	C-6	RV13	N-4
		Q27	H-6	RV14	C-4
		Q29	J-6	RV15	K-5
		Q30	N-6	RV16	C-6
				RV17	J-4
				X1	M-1



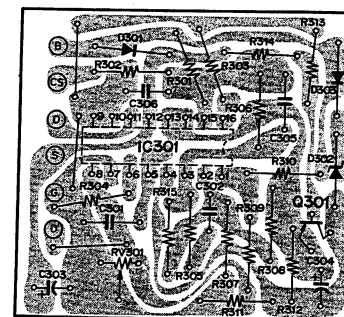


SV-44C -SOLDERING SIDE-
1-506-373-46,47,48,49
VO-5030

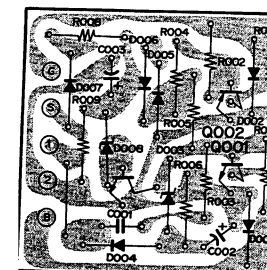
UR-02
(SWITCHING REGULATOR)



M—SOLDERING SIDE—

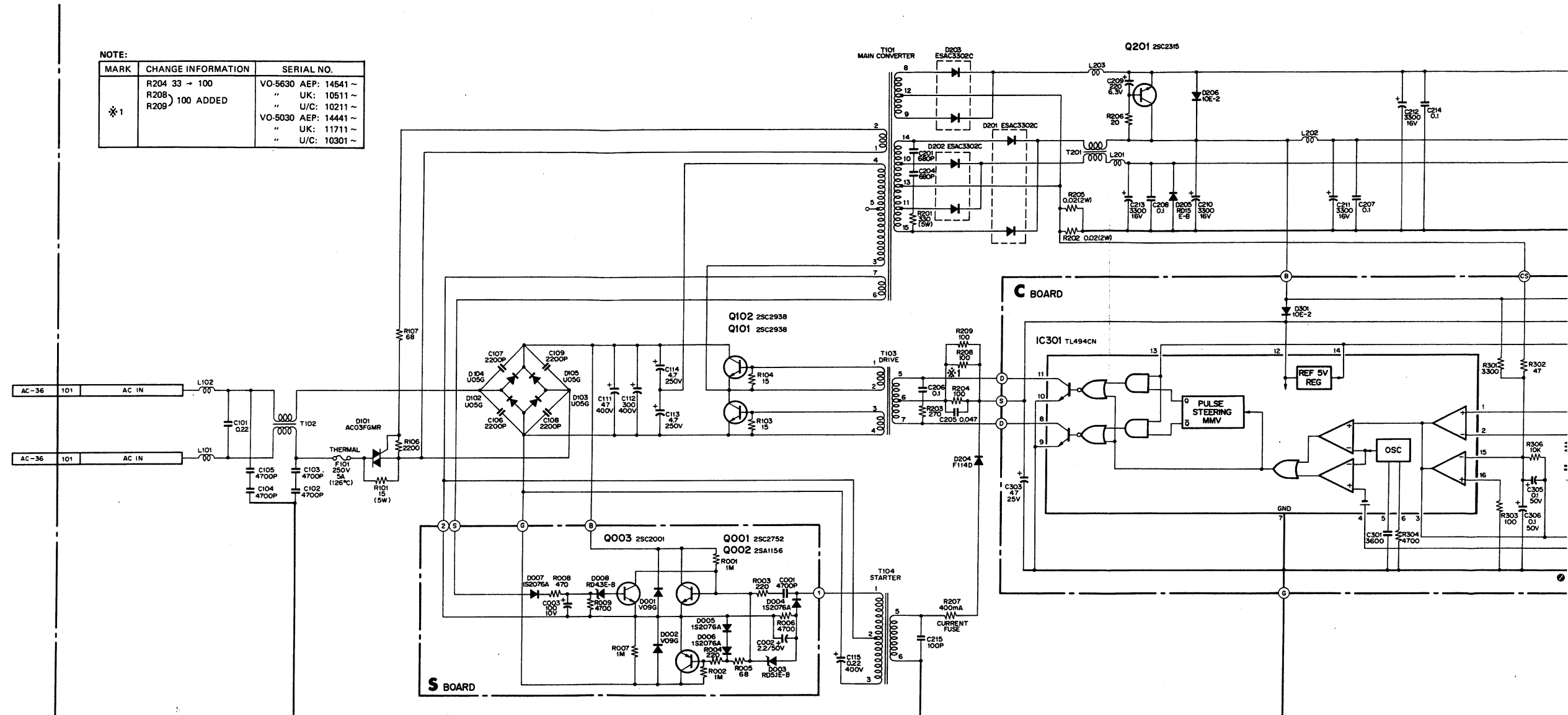


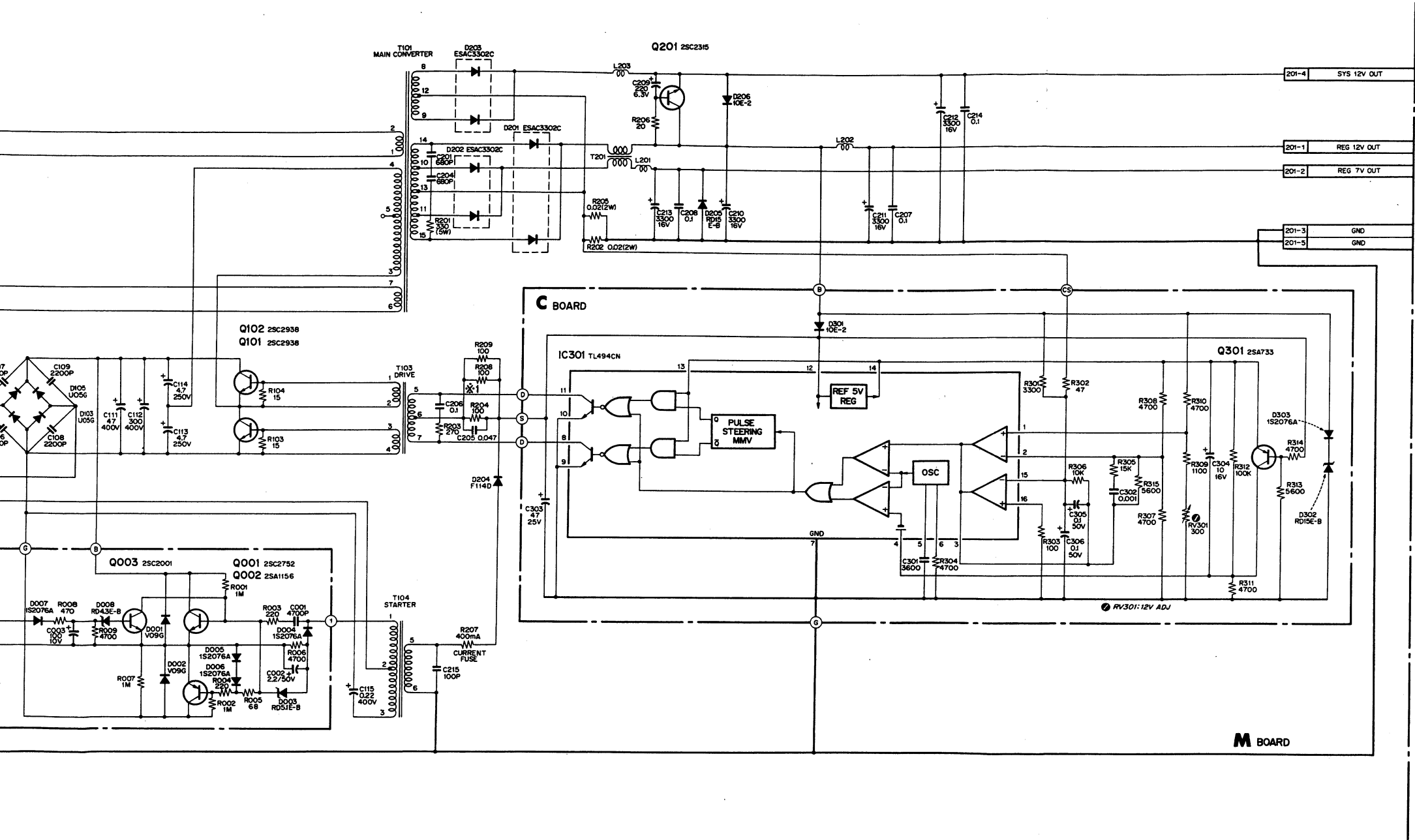
C—SOLDERING SIDE—

**S**—SOLDERING SIDE—

UR-02 UR-02

UR-02 (SWITCHING REGULATOR)

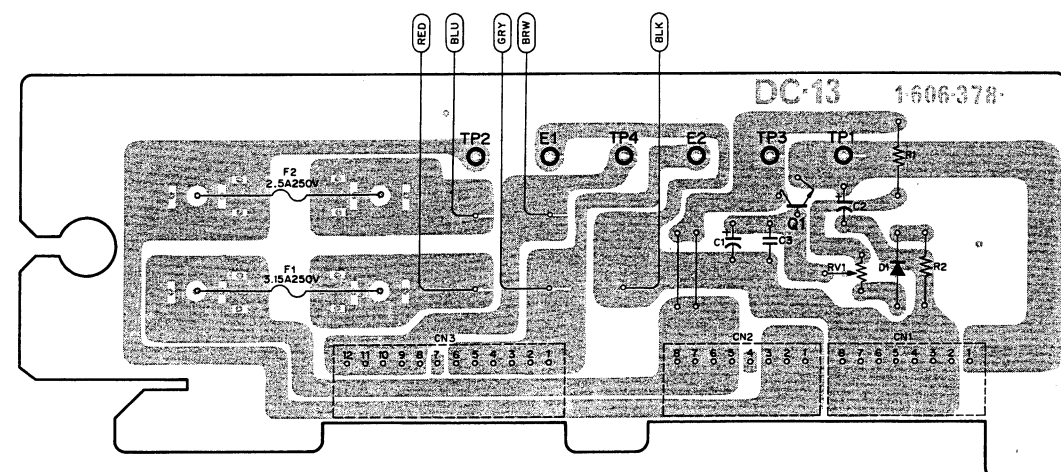




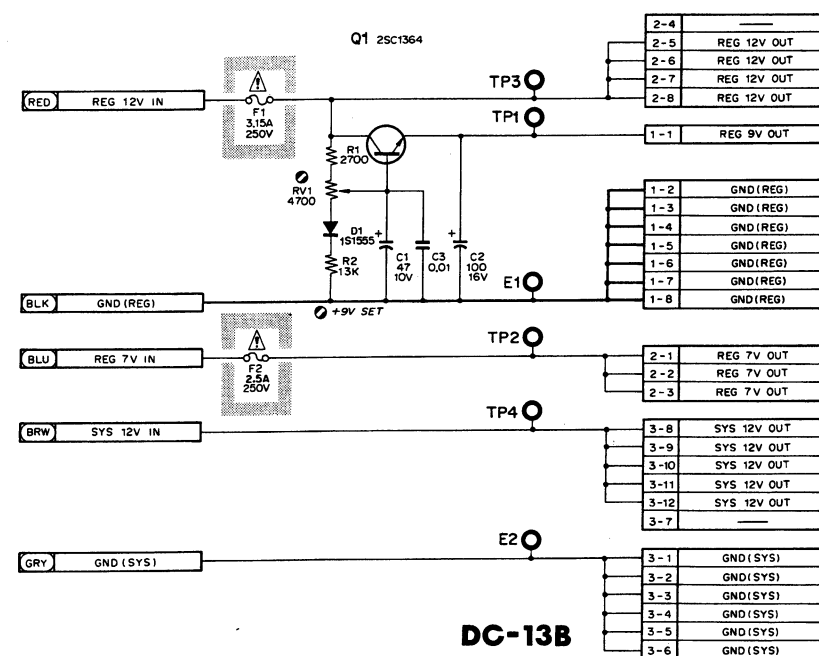
NOTE: The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

DC-13B
(DC SUPPLY)

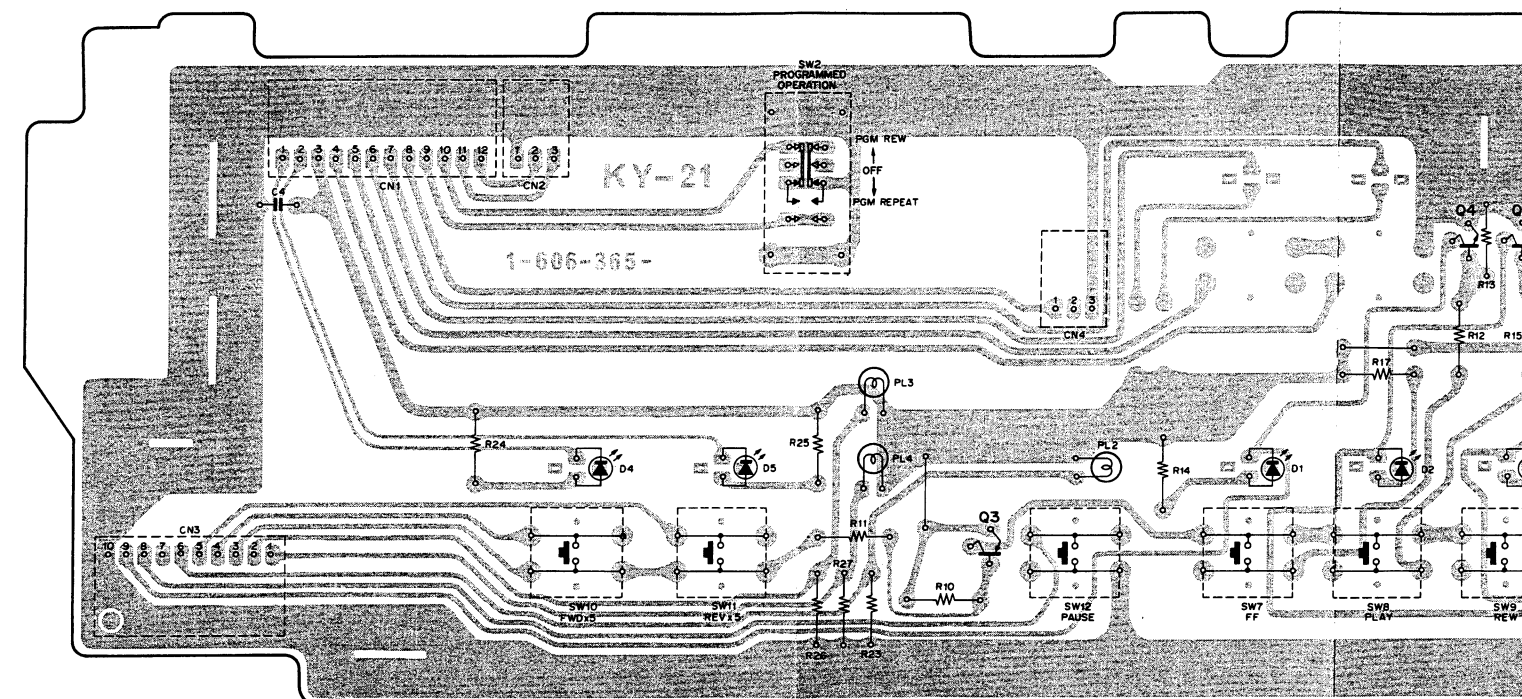
KY-21C
(FUNCTION KEY/SELECT SW)



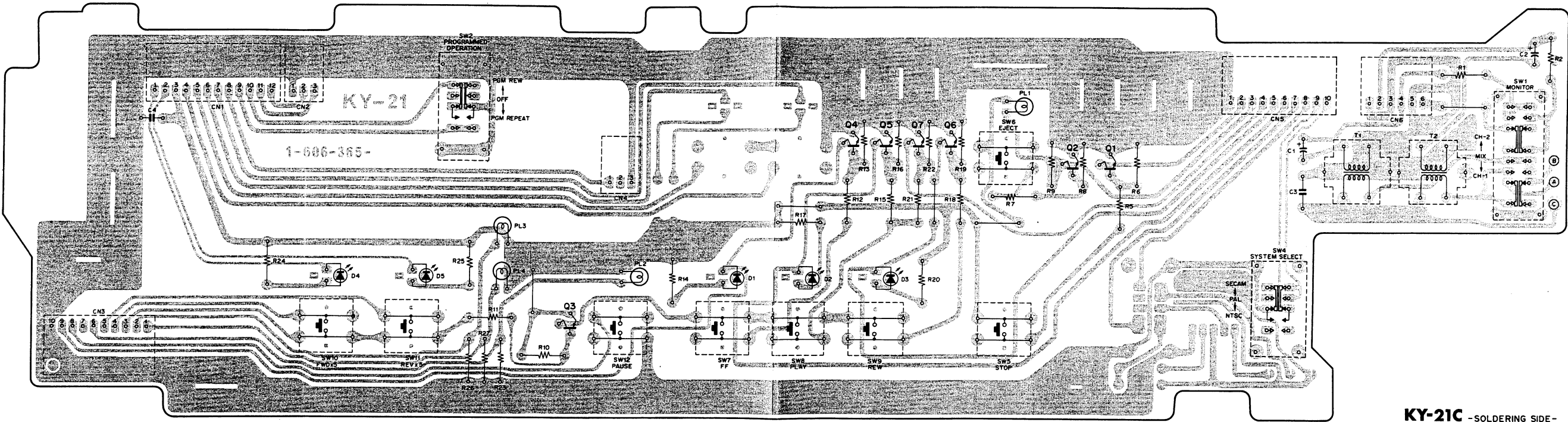
DC-13B -SOLDERING SIDE-



NOTE: The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

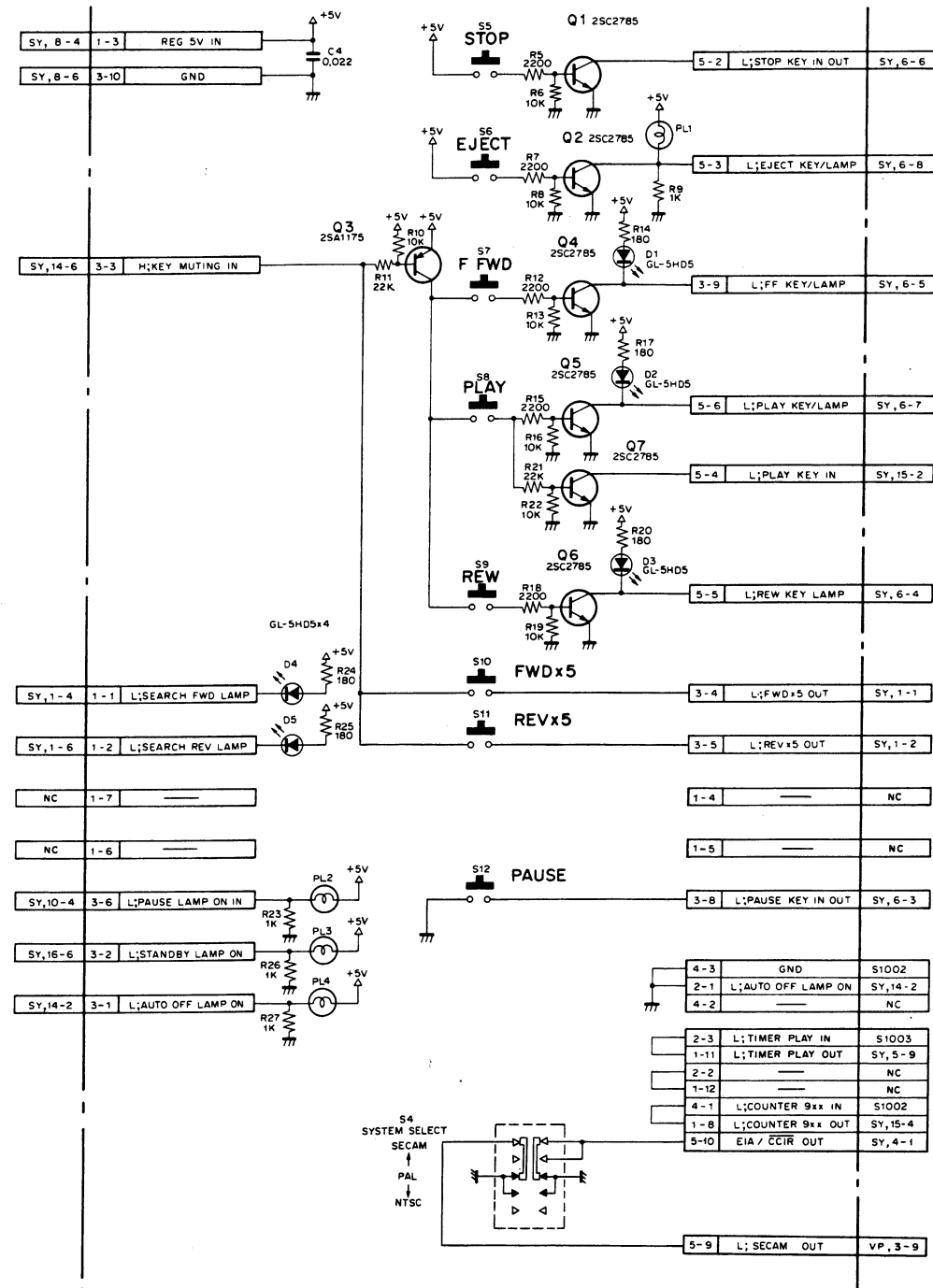


KY-21C
(FUNCTION KEY/SELECT SW)

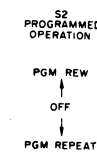
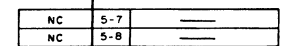
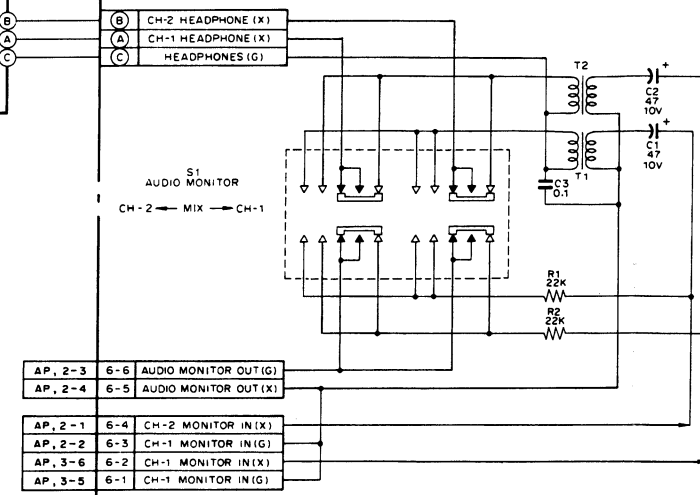
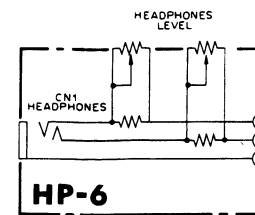


KY-21C -SOLDERING SIDE-

KY-21C
(FUNCTION KEY/SELECT SW)

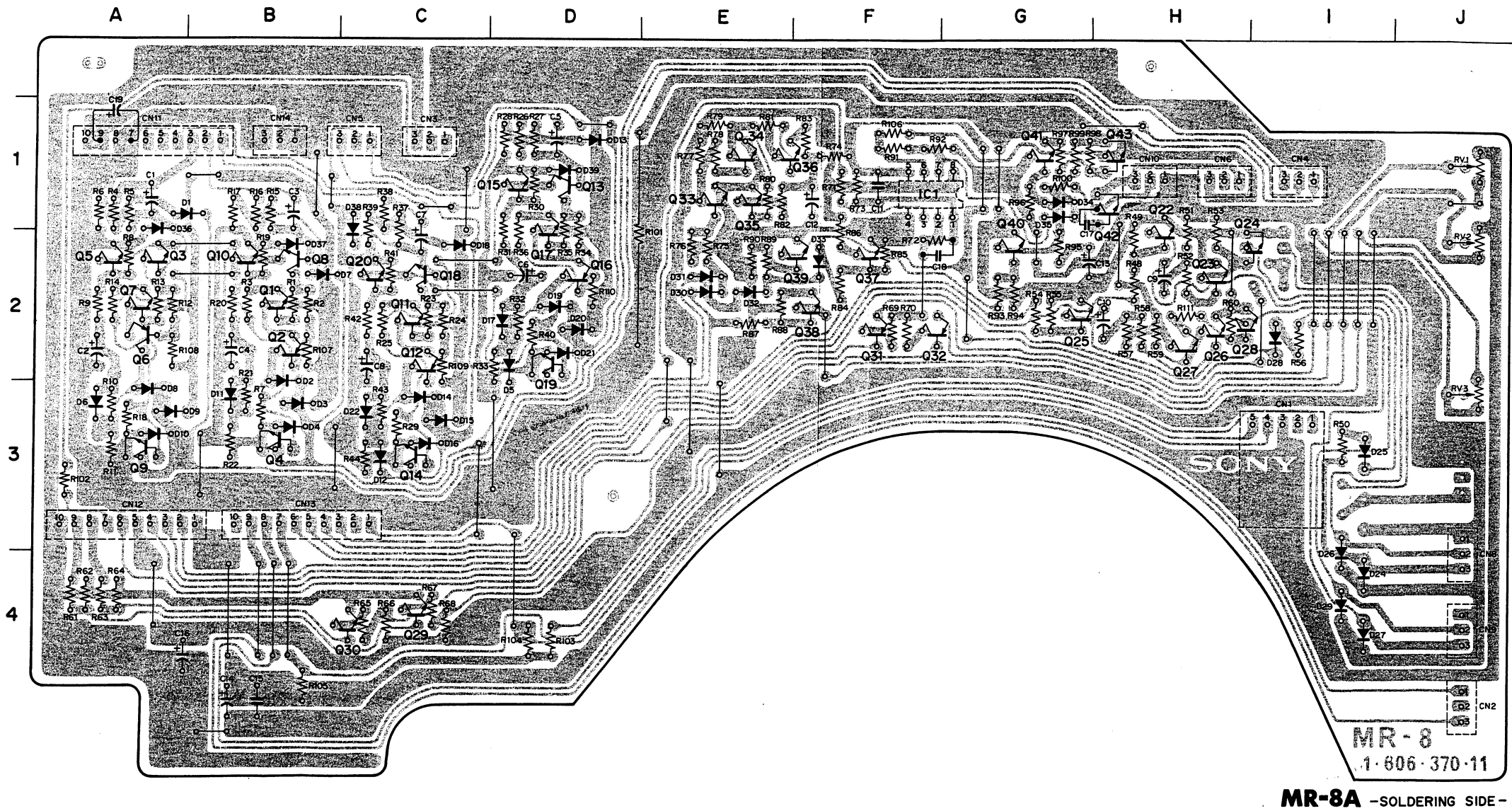
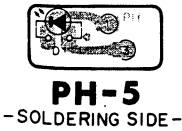
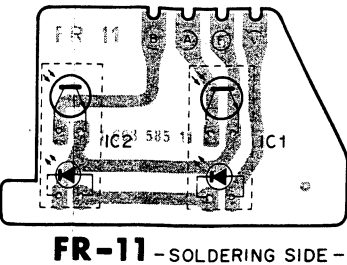
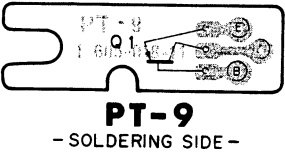
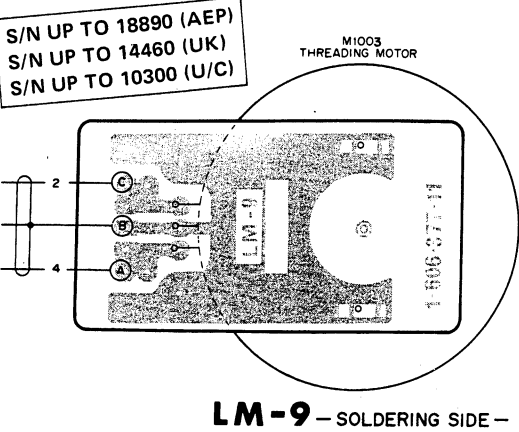


KY-21C



MR-8A
(THREADING/REEL MOTOR DRIVER)
FR-11
LM-9
PH-5
PT-9

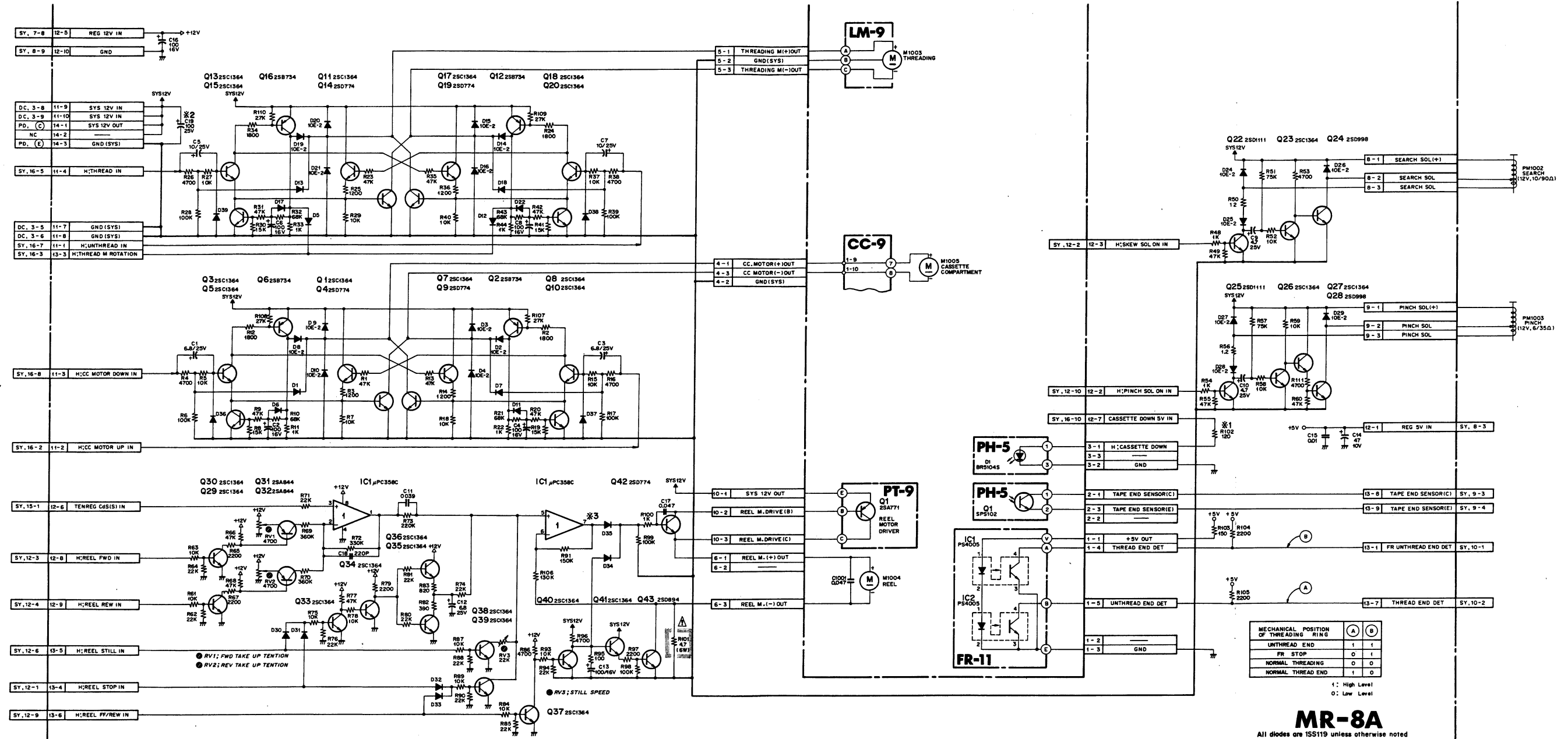
S/N UP TO 18890 (AEP)
S/N UP TO 14460 (UK)
S/N UP TO 10300 (U/C)



CN1	I-3	Q1	B-2
CN2	J-4	Q2	B-2
CN3	C-1	Q3	A-2
CN4	I-1	Q4	B-3
CN5	C-1	Q5	A-2
CN6	H-1	Q6	A-2
CN8	J-3	Q7	A-2
CN9	J-4	Q8	B-2
CN10	H-1	Q9	A-3
CN11	A-1	Q10	B-2
CN12	A-3	Q11	C-2
CN13	B-3	Q12	C-2
CN14	B-1	Q13	D-1
		Q14	C-3
D1	A-1	Q15	D-1
D2	B-3	Q16	D-2
D3	B-3	Q17	D-2
D4	B-3	Q18	C-2
D5	D-2	Q19	D-2
D6	A-3	Q20	C-2
D7	B-2	Q22	H-2
D8	A-3	Q23	H-2
D9	A-3	Q24	I-2
D10	A-3	Q25	G-2
D11	B-3	Q26	H-2
D12	C-3	Q27	H-2
D13	D-1	Q28	I-2
D14	C-3	Q29	C-4
D15	C-3	Q30	C-4
D16	C-3	Q31	F-2
D17	D-2	Q32	F-2
D18	C-2	Q33	E-1
D19	D-2	Q34	E-1
D20	D-2	Q35	E-1
D21	D-2	Q36	E-1
D22	C-3	Q37	F-2
D24	I-4	Q38	F-2
D25	I-3	Q39	F-2
D26	I-3	Q40	G-2
D27	I-4	Q41	G-1
D28	I-2	Q42	H-1
D29	I-4	Q43	H-1
D30	E-2		
D31	E-2	RV1	J-1
D32	E-2	RV2	J-2
D33	F-2	RV3	J-3
D34	G-1		
D35	G-1		
D36	A-1		
D37	B-2		
D38	C-2		
D39	D-1		
IC1	F-1		

MR-8A
(THREADING/REEL MOTOR DRIVER)
FR-11
LM-9
PH-5
PT-9

S/N UP TO 18890 (AEP)
S/N UP TO 14460 (UK)
S/N UP TO 10300 (U/C)

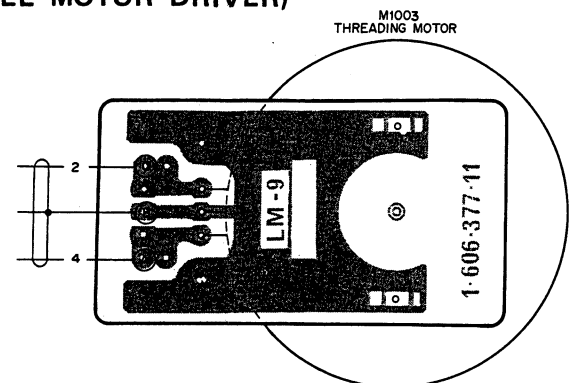


NOTE:

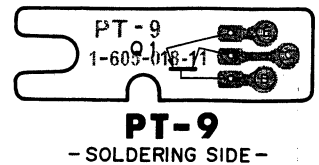
MARK	CHANGE INFORMATION	SERIAL NO.	MARK	CHANGE INFORMATION	SERIAL NO.	MARK	CHANGE INFORMATION	SERIAL NO.
※1	R102 100 → 120	VP-5000 U/C: 19351 ~ " J: 10901 ~ VP-5030 AEP: 14441 ~ " UK: 11711 ~ " U/C: 10301 ~	※2	C19 25V ADDED	VP-5000 U/C: 22851 ~ " J: 11201 ~ VP-5030 AEP: 16291 ~ " UK: 12661 ~ " U/C: 10301 ~	※3	R82 1K DELETED	VP-5000 U/C: 23851 ~ " J: 11201 ~ VP-5030 AEP: 16791 ~ " UK: 12661 ~ " U/C: 10301 ~

MR-11B (THREADING/REEL MOTOR DRIVER)
FR-11
LM-9
PH-5
PT-9

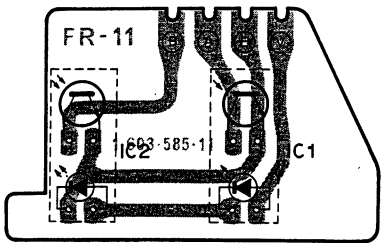
S/N 18891 AND LATER (AEP)
S/N 14461 AND LATER (UK)
S/N 10301 AND LATER (U/C)



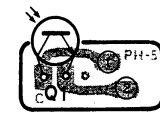
LM-9 - SOLDERING SIDE -



PT-9
- SOLDERING SIDE -



FR-11 - SOLDERING SIDE -

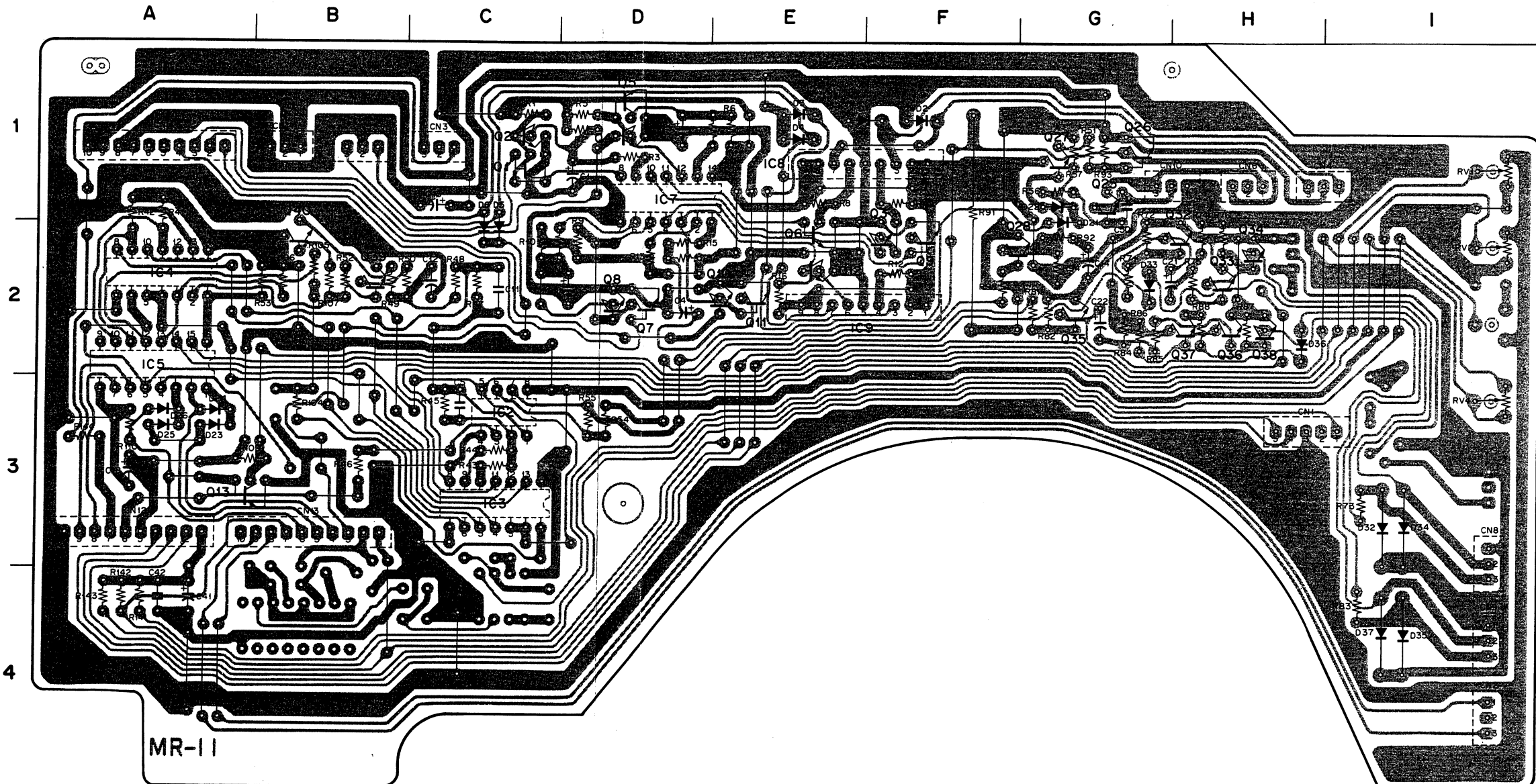


PH-5
- SOLDERING SIDE -



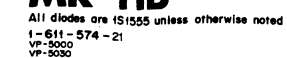
PH-5
- SOLDERING SIDE -

CN1	H-3	Q1	C-1
CN2	I-4	Q2	C-1
CN3	C-1	Q3	F-2
CN4	H-1	Q4	D-1
CN5	B-1	Q5	D-1
CN6	H-1	Q6	E-2
CN8	I-3	Q7	D-2
CN9	I-4	Q8	D-2
CN10	H-1	Q9	F-2
CN11	A-1	Q10	E-2
CN12	A-3	Q11	E-2
CN13	B-3	Q12	E-2
CN14	B-1	Q13	B-3
		Q25	G-1
D1	E-1	Q26	G-1
D2	F-1	Q27	G-1
D3	E-1	Q28	F-2
D4	E-1	Q32	H-2
D5	C-2	Q33	H-2
D6	C-2	Q34	H-2
D21	G-2	Q35	G-2
D22	G-1	Q36	H-2
D23	A-3	Q37	H-2
D24	A-3	Q38	H-2
D25	A-3	Q39	B-2
D26	A-3	Q40	B-2
D32	I-3		
D33	G-2	RV1	I-1
D34	I-3	RV2	I-2
D35	I-4	RV4	I-3
D36	H-2		
D37	I-4		
IC2	C-3		
IC3	C-3		
IC4	A-2		
IC5	A-2		
IC7	D-1		
IC8	E-1		
IC9	E-2		

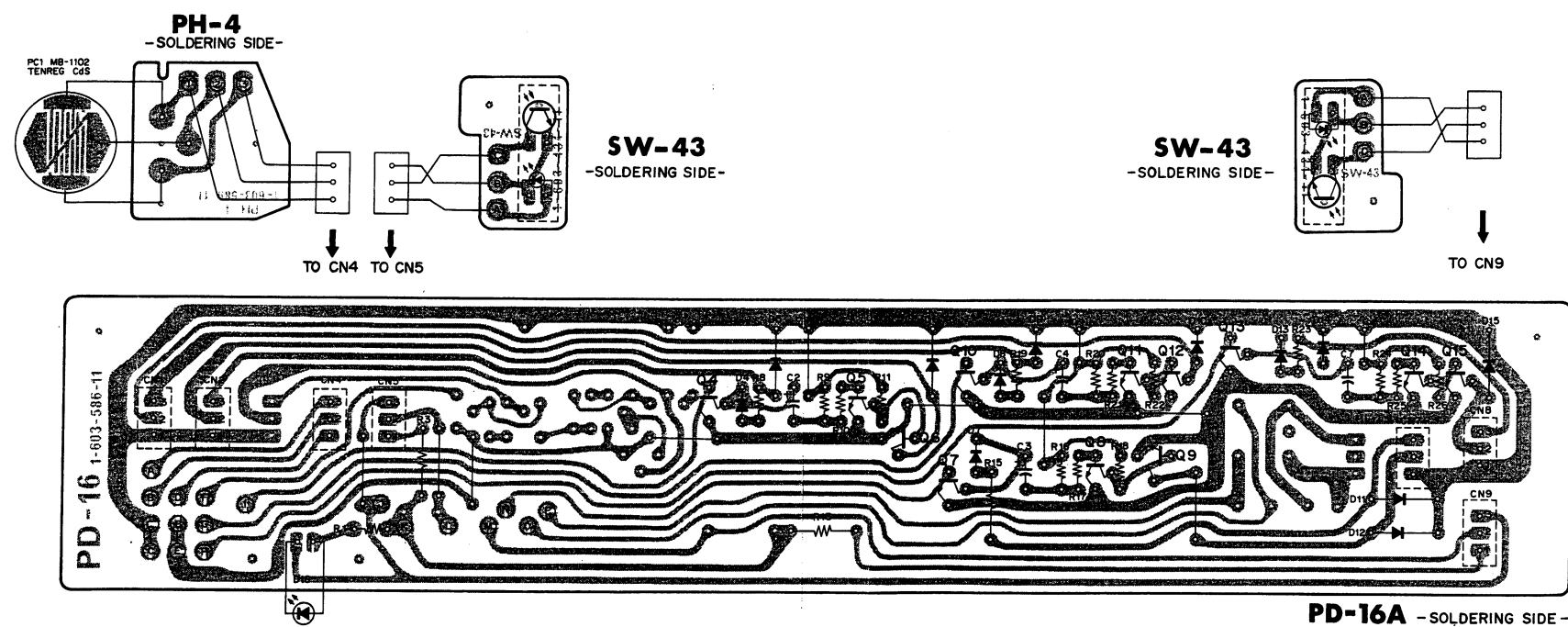


MR-11B - SOLDERING SIDE -
1-611-574-21
VP-5000
VP-5030

PT-9



PD-16A
(SOLENOID DRIVER/TAPE RUN DET.)
SW-43
PH-4

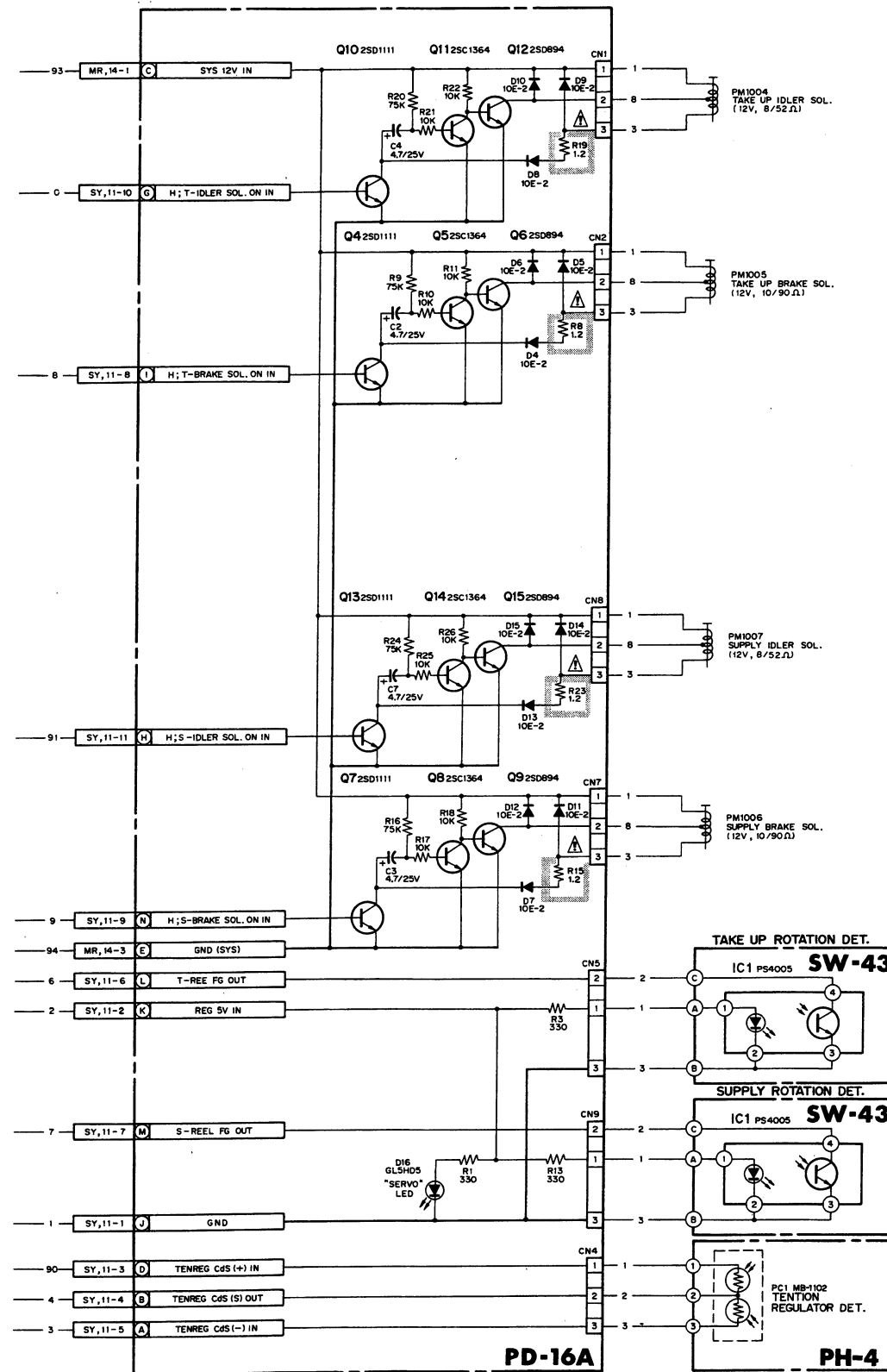


PD-16A/SW-43/PH-4 CN-42/PH-5/SW-50

PD-16A
(SOLENOID DRIVER/TAPE RUN DET.)
SW-43
PH-4

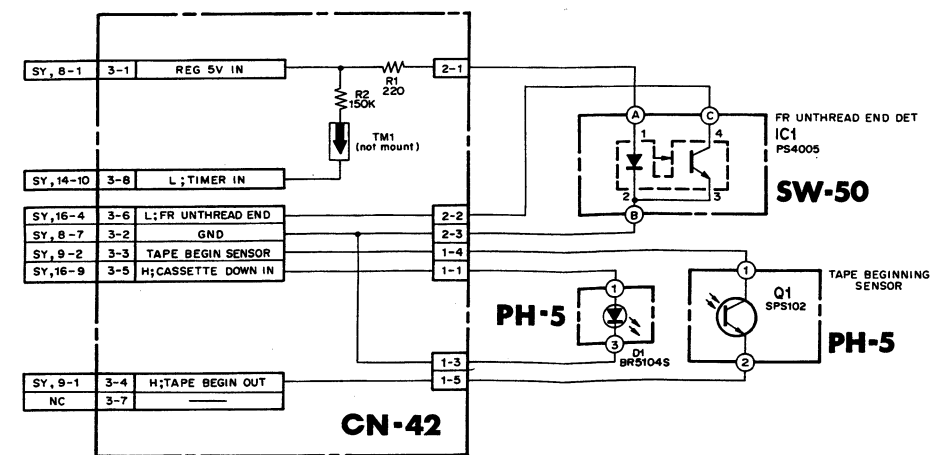
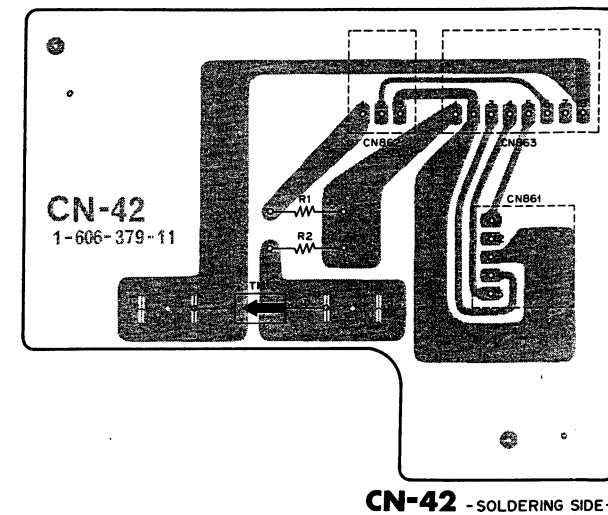
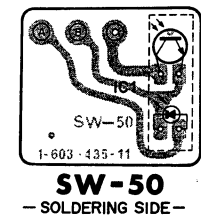
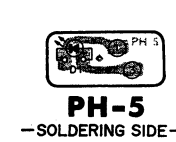
CN-42
PH-5
SW-50

CC-9
CC-1
CC-1



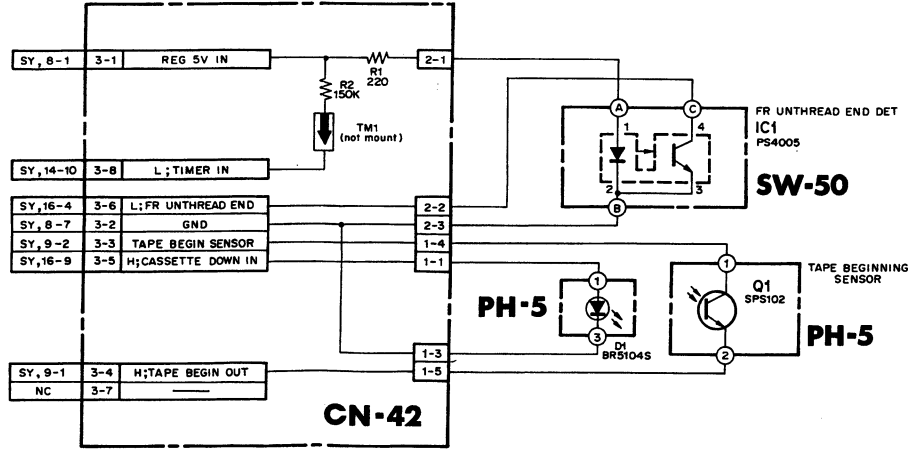
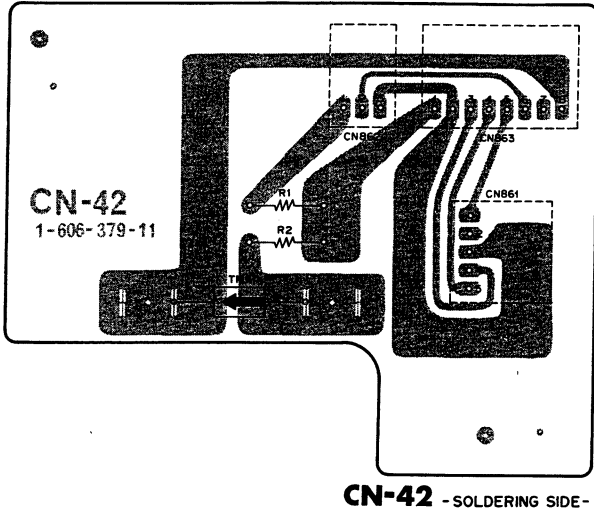
NOTE: The shaded and -marked components are critical to safety.
Replace only with same components as specified.

13-67

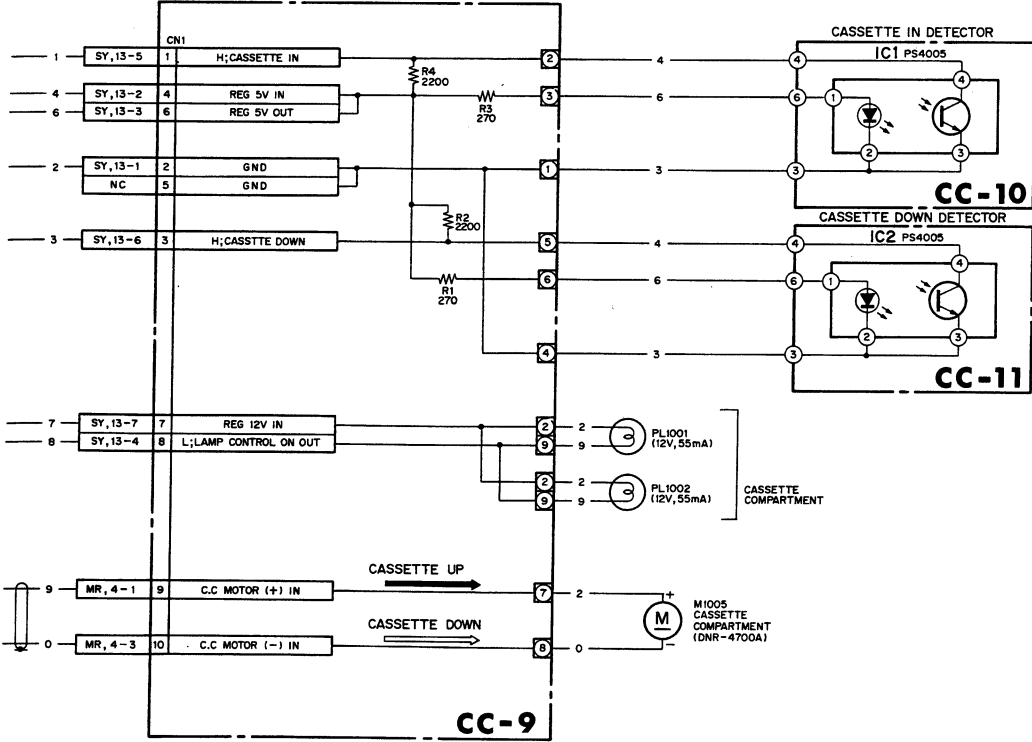
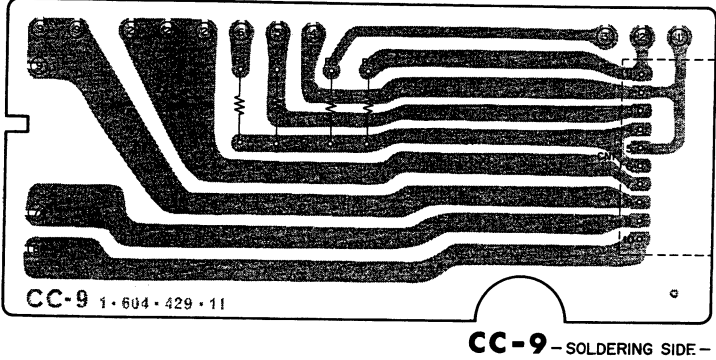
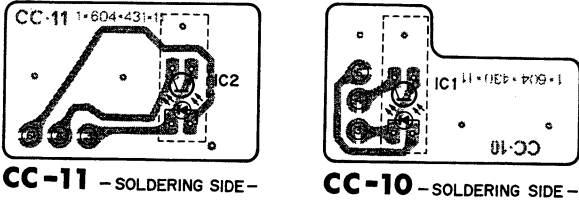


13-68

CN-42
PH-5
SW-50

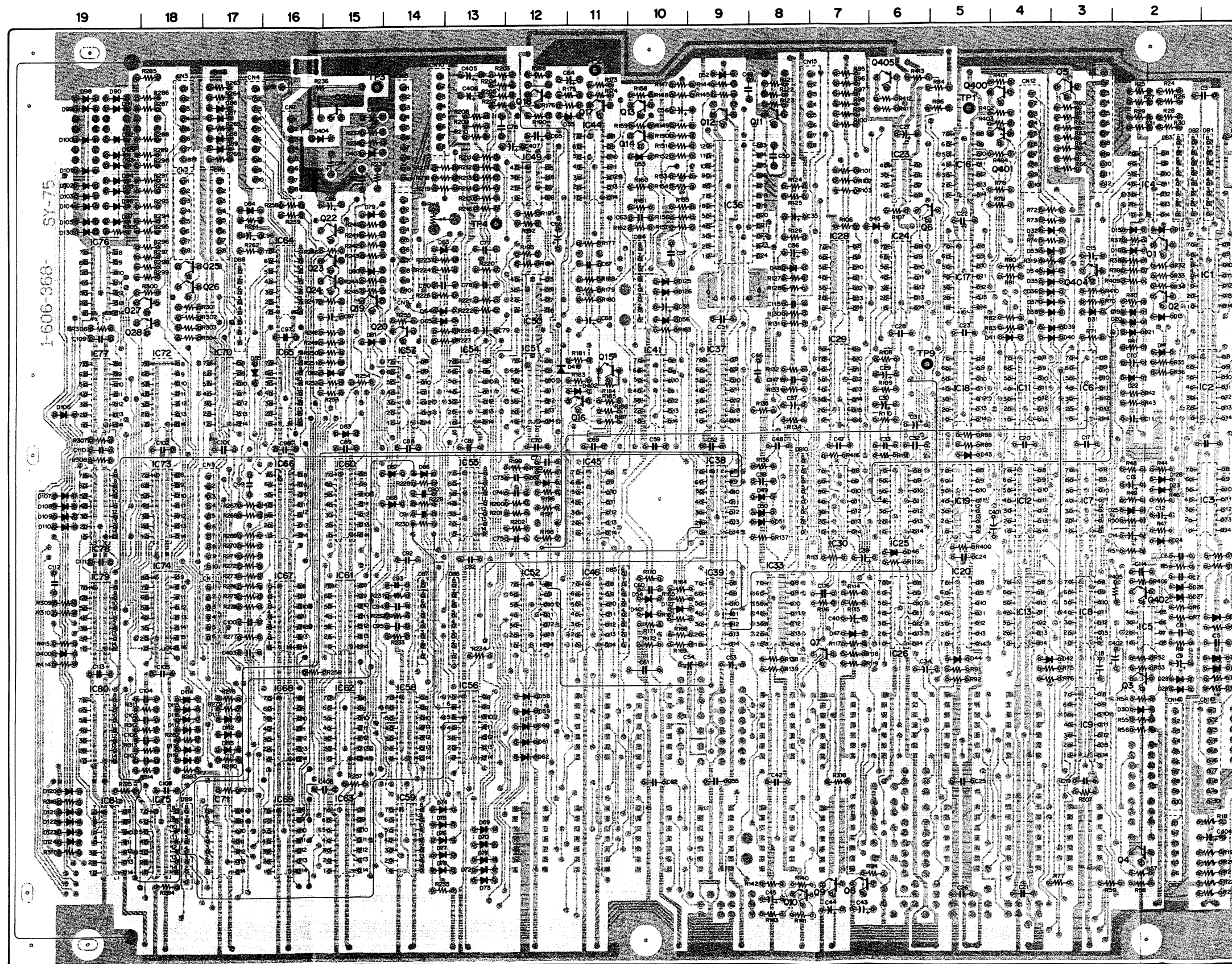
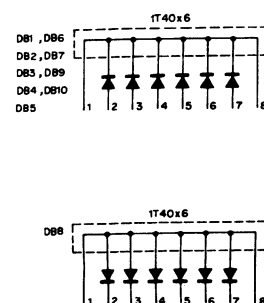


CC-9
CC-10
CC-11

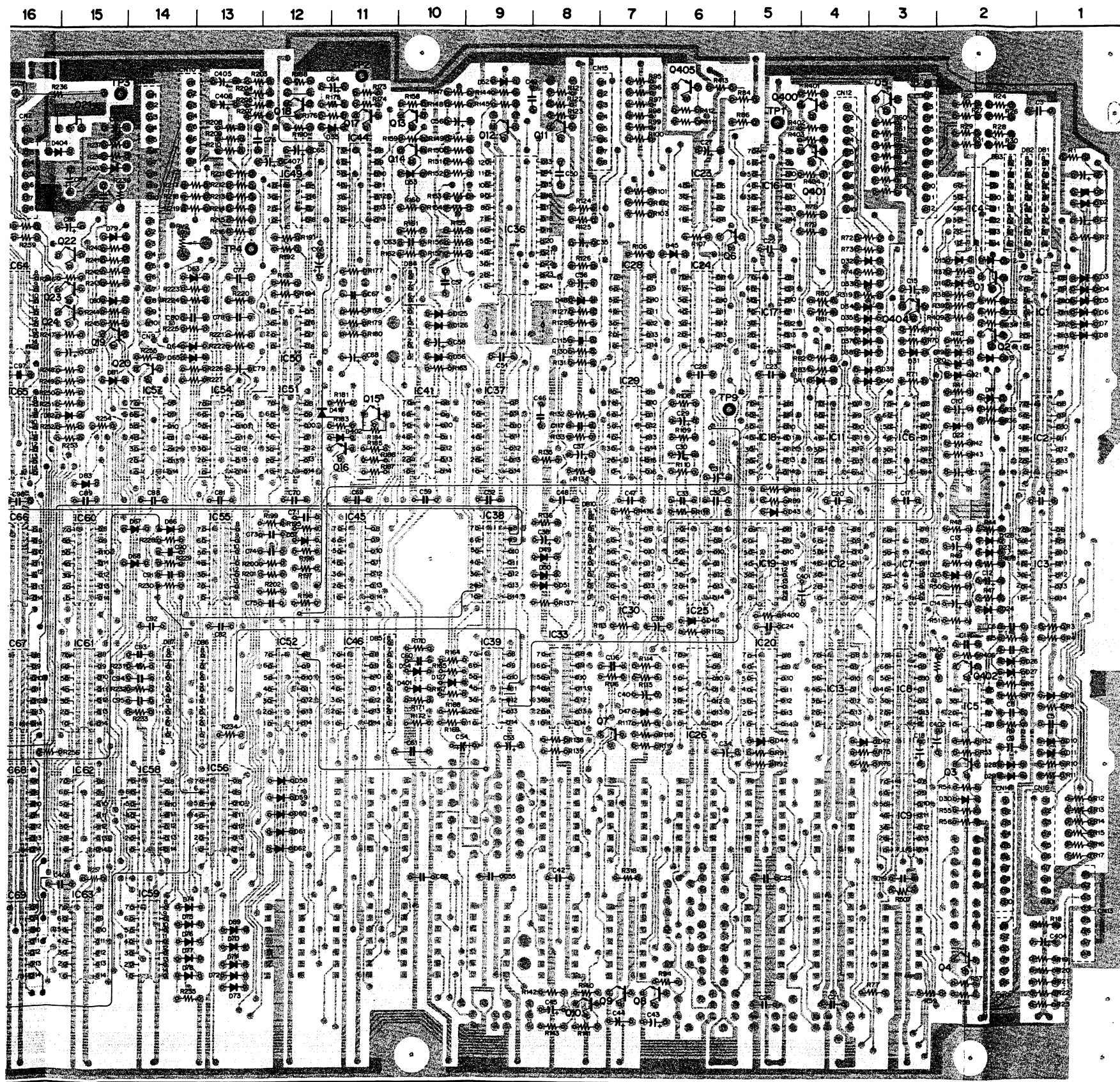


SY-75A
(SYSTEM CONTROL)

S/N UP TO 10340 (AEP)
S/N UP TO 10110 (UK)



SY-75A SY-75A



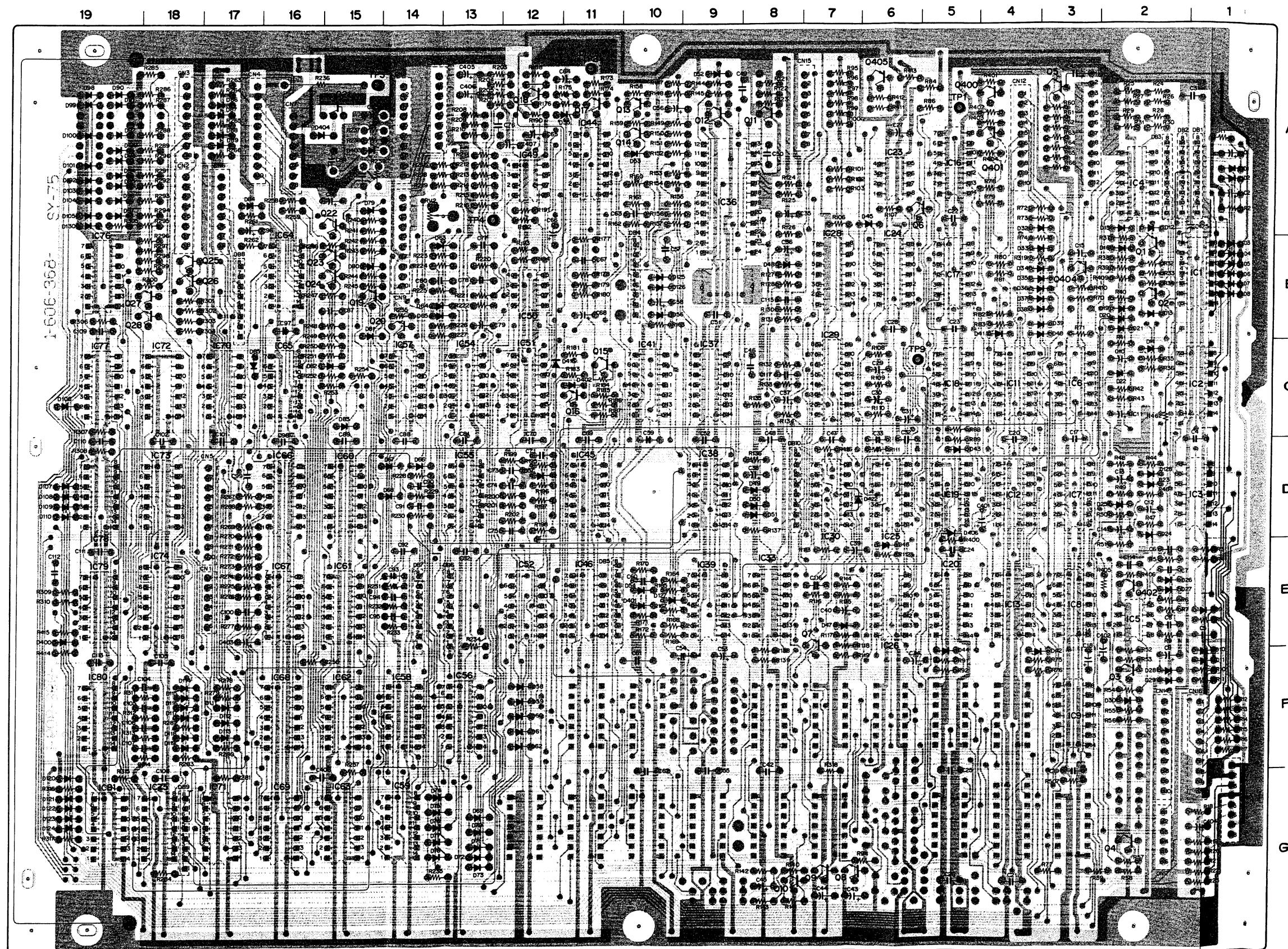
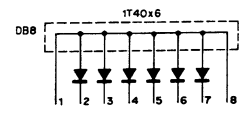
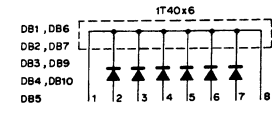
SY-75A - SOLDERING SIDE -

CN1	E-17	D96	A-19	Q5	A-3
CN2	A-18	D97	A-19	Q6	A-5
CN3	A-18	D98	A-19	Q7	E-7
CN4	A-17	D99	A-19	Q8	G-7
CN5	D-17	D100	A-19	Q9	G-7
CN6	A-17	D101	A-19	Q10	G-8
CN7	A-16	D102	A-19	Q11	A-8
CN8	A-14	D103	A-19	Q12	A-9
CN9	B-14	D104	A-19	Q13	A-10
CN10	A-14	D105	A-19	Q14	A-10
CN11	A-3	D106	C-19	Q15	C-11
CN12	A-4	D107	D-19	Q16	C-11
CN13	G-1	D108	D-19	Q17	A-11
CN14	F-2	D109	D-19	Q18	A-12
CN15	A-7	D110	D-19	Q19	B-15
CN16	F-1	D111	F-17	Q20	B-14
CN17	G-2	D112	F-17	Q21	A-15
		D113	F-17	Q22	A-15
		D114	F-18	Q23	B-15
		D115	F-18	Q24	B-15
		D116	F-18	Q25	B-18
		D117	F-18	Q26	B-18
		D118	F-18	Q27	B-18
		D119	F-18	Q28	B-18
		D120	G-19	Q400	A-4
		D121	G-19	Q401	A-4
		D122	G-19	Q402	E-2
		D123	G-19	Q403	B-3
		D124	G-19	Q404	A-6
		D125	B-10	RV2	A-14
		D126	B-10		
		D127	E-10		
		D128	D-2		
		D129	A-19		
		D130	A-19		
		D131	A-19		
		D132	A-19		
		D133	A-19		
		D134	A-19		
		D135	A-19		
		D136	A-19		
		D137	A-19		
		D138	A-19		
		D139	A-19		
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		D142	A-19		
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		D144	A-19		
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		D186	A-19		
		D187	A-19		
		D188	A-19		
		D189	A-19		
		D190	A-19		
		D191	A-19		
		D192	A-19		
		D193	A-19		
		D194	A-19		
		D195	A-19		

REF. NO.	TYPE.	12V PIN	5V PIN	GND PIN
IC1	TC4081BP	14	7	
IC2	TC4001BP	14	7	
IC3	TC4081BP	14	7	
IC4	M54529P	14	7	
IC5	#PC4558C	8	4	
IC6	TC4069UBP	14	7	
IC7	TC4081BP	14	7	
IC8	TC4001BP	14	7	
IC9	M54529P	14	7	
IC10	TC4081BP	14	7	
IC11	TC4001BP	14	7	
IC12	TC4071BP	14	7	
IC13	TC4071BP	14	7	
IC14	TC4071BP	14	7	
IC15	TC4071BP	14	7	
IC16	TC4071BP	14	7	
IC17	TC4071BP	14	7	
IC18	TC4073BP	14	7	
IC19	TC4001BP	14	7	
IC20	TC4081BP	14	7	
IC21	#PC4558C	8	4	
IC22	TC4081BP	14	7	
IC23	TC4001BP	14	7	
IC24	TC4071BP	14	7	
IC25	TC4071BP	14	7	
IC26	TC4071BP	14	7	
IC27	TC4069UBP	14	7	
IC28	TC4069UBP	14	7	
IC29	HD14538BP	16	8	
IC30	TC4069UBP	14	7	
IC31	TC4075BP	14	7	
IC32	TC4075BP	14	7	
IC33	TC4075BP	14	7	
IC34	TC4075BP	14	7	
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IC39	TC4075BP	14	7	
IC40	TC4075BP	14	7	
IC41	TC4075BP	14	7	
IC42	TC4075BP	14	7	
IC43	TC4075BP	14	7	
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IC67	TC4075BP	14	7	
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IC70	TC4075BP	14	7	
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IC88	TC4075BP	14	7	
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IC90	TC4075BP	14	7	
IC91	TC4075BP	14	7	
IC92	TC4075BP	14	7	
IC93	TC4075BP	14	7	
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IC95	TC4075BP	14	7	
IC96	TC4075BP	14	7	
IC97	TC4075BP	14	7	
IC98	TC4075BP	14	7	
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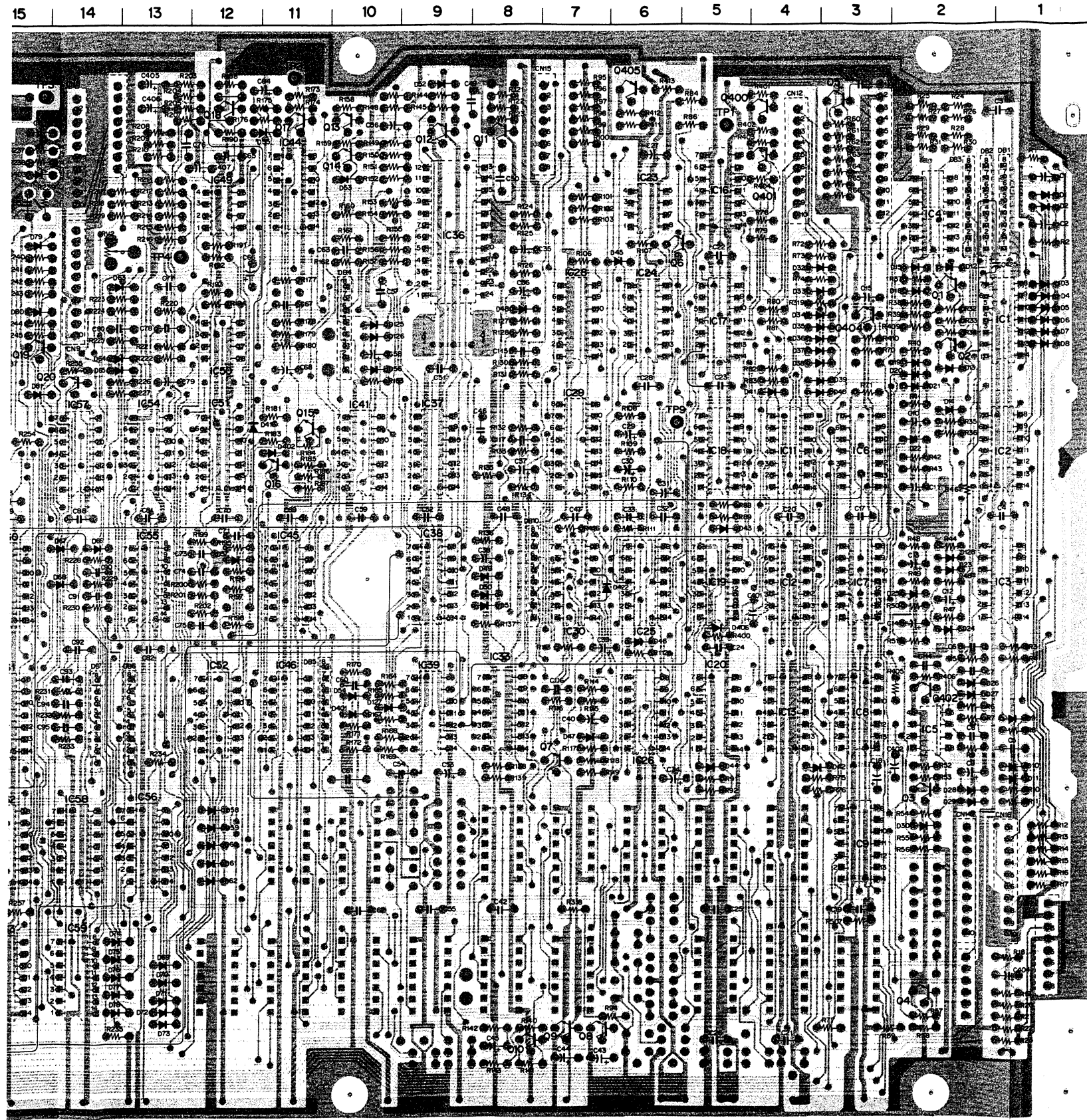
SY-75A
(SYSTEM CONTROL)

S/N 10341 TO 14740 (AEP)
S/N 10111 TO 12210 (UK)
S/N 10001 TO 10300 (U/C)



SY-75A-SOLDERING SIDE -

SY-75A SY-75A



SY-75A-SOLDERING SIDE -

13-77 (a)

CN1	E-17	D98	A-19	O5	A-3
CN2	A-18	D99	A-19	O6	A-5
CN3	A-18	D100	A-19	O7	E-7
CN4	A-17	D101	A-19	O8	G-7
CN5	D-17	D102	A-19	O9	G-7
CN6	A-17	D103	A-19	O10	G-8
CN7	A-16	D104	A-19	O11	A-8
CN8	A-14	D105	A-19	O12	A-9
CN9	B-14	D106	C-19	O13	A-10
CN10	A-14	D107	D-19	O14	A-10
CN11	A-3	D108	D-19	O15	C-11
CN12	A-4	D109	D-19	O16	C-11
CN13	G-1	D110	D-19	O17	A-11
CN14	F-2	D111	F-17	O18	A-12
CN15	A-7	D112	F-17	O19	B-15
CN16	F-2	D113	F-17	O20	B-14
CN17	G-2	D114	F-18	O21	A-15
D1	A-1	D115	F-18	O22	A-15
D2	A-1	D116	F-18	O23	B-15
D3	B-1	D117	F-18	O24	B-15
D4	B-1	D118	F-18	O25	B-18
D5	B-1	D119	F-18	O26	B-18
D6	B-1	D120	G-19	O27	B-18
D7	B-1	D121	G-19	O28	B-18
D8	B-1	D122	G-19	O29	A-4
D9	E-1	D123	G-19	O400	A-4
D10	F-1	D124	G-19	O402	E-2
D11	F-1	D125	B-10	O404	B-3
D12	A-2	D126	B-10	O405	A-6
D13	B-2	D127	E-10	RV2	A-14
D14	C-2	D128	D-2	TP1	A-5
D15	A-2	D129	A-19	TP2	A-11
D16	B-2	D130	A-19	TP3	A-15
D17	B-2	D400	E-10	TP4	A-13
D18	B-2	D401	E-10	TP9	C-6
D19	B-2	D402	C-11		
D20	B-2	D403	A-15		
D21	B-2	D404	A-16		
D22	C-2	D406	D-5		
D23	D-2	D416	C-12		
D24	D-2	D422	D-7		
D25	D-2				
D26	E-2	IC1	B-1		
D27	E-2	IC2	C-1		
D28	F-2	IC3	D-1		
D29	F-2	IC4	A-2		
D30	F-2	IC5	E-2		
D31	F-2	IC6	C-3		
D32	A-4	IC7	D-3		
D33	B-4	IC8	E-3		
D34	B-4	IC9	F-3		
D35	B-4	IC10	C-4		
D36	B-4	IC11	D-4		
D37	B-4	IC12	D-4		
D38	B-4	IC13	E-4		
D39	B-4	IC14	F-4		
D40	B-4	IC15	B-5		
D41	B-4	IC16	C-5		
D42	F-3	IC17	D-5		
D43	D-5	IC18	E-5		
D44	F-5	IC19	A-6		
D45	A-6	IC20	B-6		
D46	E-6	IC21	D-6		
D47	E-7	IC22	E-6		
D48	B-8	IC23	B-7		
D49	D-8	IC24	C-7		
D50	D-8	IC25	D-7		
D51	D-8	IC26	E-8		
D52	A-9	IC27	A-9		
D53	A-10	IC28	C-9		
D54	F-9	IC29	D-9		
D55	A-11	IC30	E-9		
D56	B-10	IC31	C-10		
D57	D-12	IC32	A-11		
D58	F-12	IC33	D-11		
D59	F-12	IC34	E-11		
D60	F-12	IC35	A-12		
D61	F-12	IC36	B-12		
D62	F-12	IC37	C-12		
D63	B-13	IC38	E-12		
D64	B-13	IC39	C-13		
D65	B-13	IC40	D-13		
D66	D-14	IC41	F-13		
D67	D-14	IC42	C-14		
D68	D-14	IC43	F-14		
D69	G-13	IC44	G-14		
D70	G-13	IC45	D-15		
D71	G-13	IC46	E-15		
D72	G-13	IC47	F-15		
D73	G-13	IC48	G-15		
D74	G-13	IC49	B-16		
D75	G-13	IC50	C-16		
D76	G-13	IC51	D-16		
D77	G-13	IC52	E-16		
D78	G-13	IC53	F-16		
D79	A-16	IC54	G-16		
D80	B-16	IC55	C-17		
D81	B-16	IC56	G-17		
D82	C-16	IC57	C-18		
D83	C-16	IC58	D-18		
D84	A-17	IC59	E-18		
D85	C-17	IC60	G-18		
D86	A-17	IC61	B-19		
D87	A-17	IC62	C-19		
D88	A-17	IC63	D-19		
D89	A-17	IC64	E-19		
D90	A-19	IC65	F-19		
D91	A-19	IC66	G-19		
D92	A-19				
D93	A-19				
D94	A-19				
D95	A-19				
D96	A-19				
D97	A-19				

REF. NO.	TYPE.	12V PIN	5V PIN	GND PIN
IC1	TC4081BP	14	7	7
IC2	TC4001BP	14	7	7
IC3	TC4081BP	14	7	7
IC4	M54529P	14	7	7
IC5	MPC4558C	14	7	7
IC6	TC4069UBP	14	7	7
IC7	TC4081BP	14	7	7
IC8	TC4001BP	14	7	7
IC9	M54529P	14	7	7
IC10	TC4081BP	14	7	7
IC11	TC4081BP	14	7	7
IC12	TC4011BP	14	7	7
IC13	TC4071BP	14	7	7
IC14	TC4011BP	14	7	7
IC15	TC4071BP	14	7	7
IC16	TC4011BP	14	7	7
IC17	TC4071BP	14	7	7
IC18	TC4073BP	14	7	7
IC19	TC4001BP	14	7	7
IC20	TC4081BP	14	7	7
IC21	MPC4558C	14	7	7
IC22	TC4081BP	14	7	7
IC23	TC4001BP	14	7	7
IC24	TC4071BP	14	7	7
IC25	TC4011BP	14	7	7
IC26	TC4071BP	14	7	7
IC27	TC4069UBP	14	7	7
IC28	HD14538BP	14	7	7
IC29	TC4069UBP	14	7	7
IC30	TC4075BP	14	7	7
IC31	CX757	14	7	7
IC32	TC4081BP	14	7	7
IC33	TC4025BP	14	7	7
IC34	TC4030BP	14	7	7
IC35	TC4073BP	14	7	7
IC36	M54529P	14	7	7
IC37	TC4081BP	14	7	7
IC38	TC4081BP	14	7	7
IC39	TC4081BP	14	7	7
IC40	TC4081BP	14	7	7
IC41	TC4081BP	14	7	7
IC42	TC4081BP	14	7	7
IC43	TC4081BP	14	7	7
IC44	TC4081BP	14	7	7
IC45	TC4081BP	14	7	7
IC46	TC4081BP	14	7	7
IC47	NJM2903D	14	7	7
IC48	NJM4558D-D	14	7	7
IC49	M54529P	14	7	7
IC50	TC4069UBP	14	7	7
IC51	TC4011BP	14	7	7
IC52	TC4013BP	14	7	7
IC53	TC4069UBP	14	7	7
IC54	M54529P	14	7	7
IC55	TC4001BP	14	7	7
IC56	TC4081BP	14	7	7
IC57	TC4081BP	14	7	7
IC58	TC4081BP	14	7	7
IC59	TC4081BP	14	7	7
IC60	TC4081BP	14	7	7
IC61	TC4081BP	14	7	7
IC62	TC4069UBP	14	7	7
IC63	TC4071BP	14	7	7
IC64	M54529P	14	7	7
IC65	M54529P	14	7	7
IC66	MC14584BCP	14	7	7
IC67	M54529P	14	7	7
IC68	TC4011BP	14	7	7
IC69	TC4001BP	14	7	7
IC70	TC4081BP	14	7	7
IC71	TC4081BP	14	7	7
IC72	TC4013BP	14	7	7
IC73	TC4073BP	14	7	7
IC74	TC4520BP	14	7	7
IC75	TC4001BP	14	7	7
IC76	M54529P	14	7	7
IC77	TC4081BP	14	7	7
IC78	TC4025BP	14	7	7
IC79	TC4069UBP	14	7	7
IC80	TC4001BP	14	7	7
IC81	TC4011BP	14	7	7
IC82	TC4001BP	14	7	7

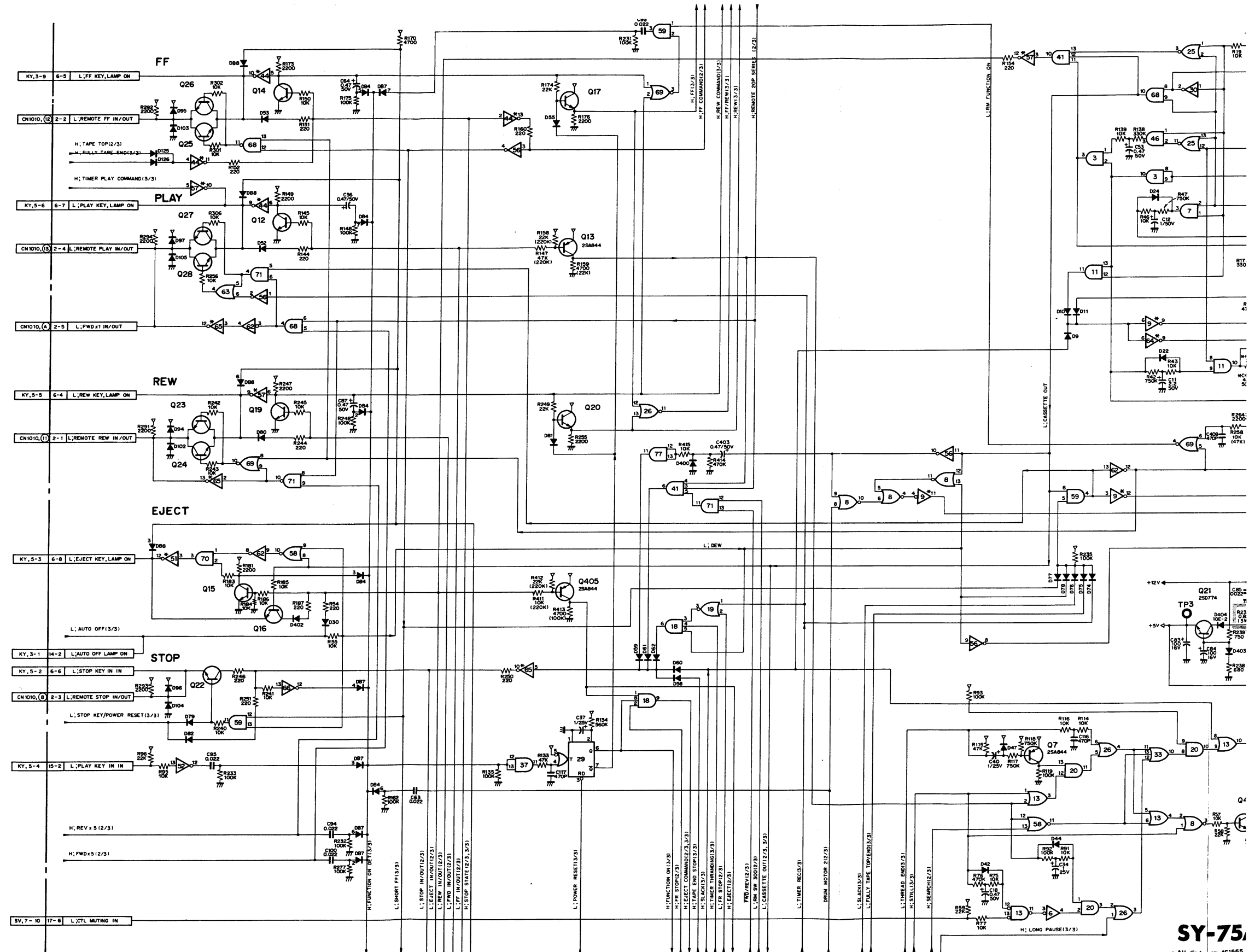
13-78 (a)

SY-75A (1/3) SY-75A (1/3)

SY-75A (1/3)
(SYSTEM CONTROL)

S/N UP TO 14740 (AEP)
S/N UP TO 12210 (UK)
S/N UP TO 10300 (U/C)

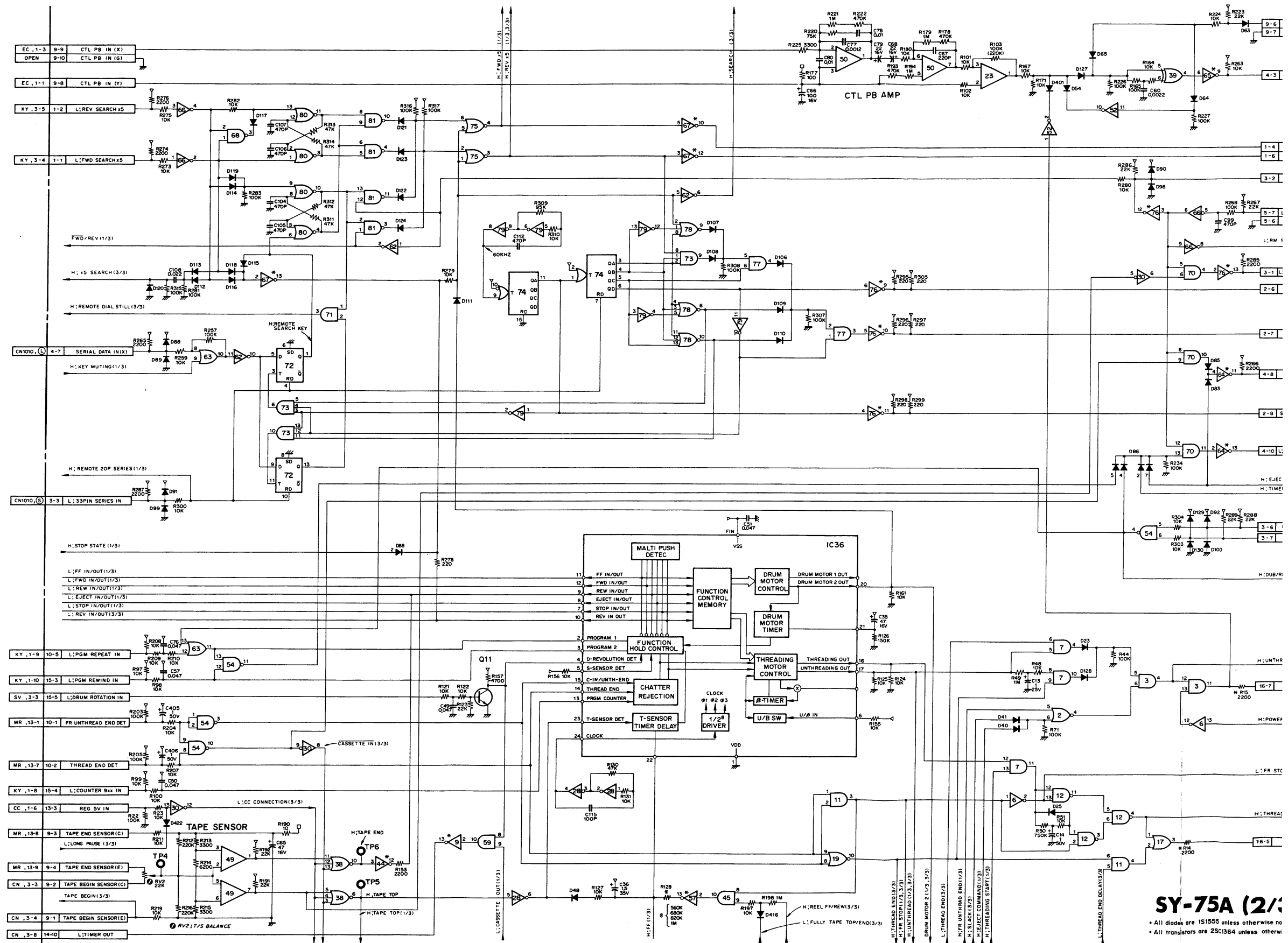
MARK	CHANGE INFORMATION	SERIAL NO.
	D31 1S1555 DELETED	VP-5000 U/C: 15351 ~
	D38 1S1555 ADDED	" J: 10701 ~
	D406 1S1555 ADDED	VP-5030 AEP: 12641 ~
	D422 1S1555 ADDED	" UK: 10811 ~
	R8, R14 2200 → 1K	" U/C: 10301 ~
	R239 750 → 680	
	C425 4.7/50V ADDED	
	C426 0.022 ADDED	
	R482 27K ADDED	
	CHANGED CONNECTION	
	IC11-4 — IC17-2	
	SHORT	
	OPEN	
	(IC17-2 → GND)	





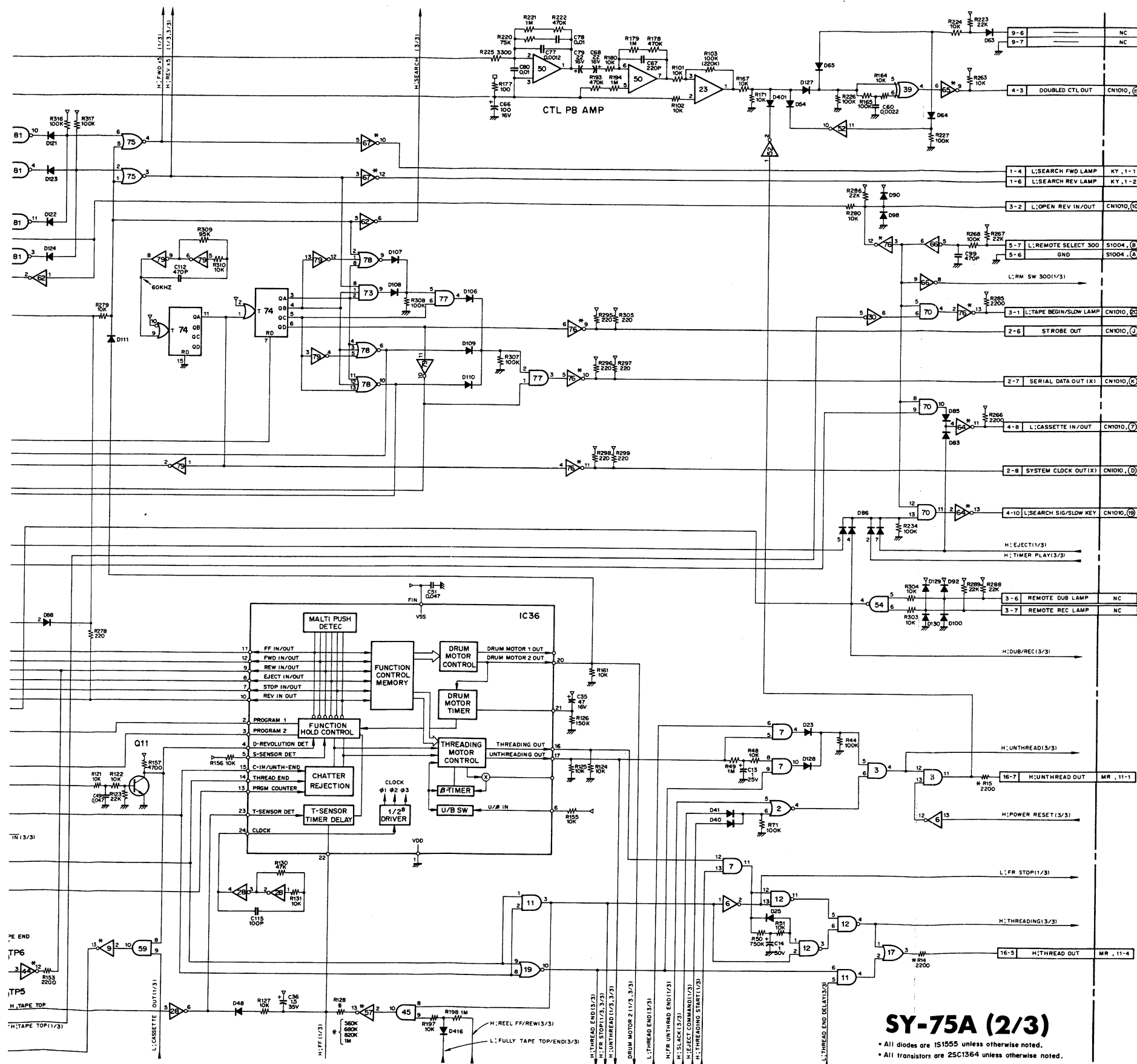
- All diodes are 1S1555 unless otherwise noted.
- All transistors are 2SC1364 unless otherwise noted

NOTE: The shaded and  -marked components are critical to safety.
Replace only with same components as specified.

SY-75A (2/3)
(SYSTEM CONTROL)S/N UP TO 14740 (AEP)
S/N UP TO 12210 (UK)
S/N UP TO 10300 (U/C)

SY-75A (2/3)

All diodes are 1S1555 unless otherwise noted.
All transistors are 2SC1364 unless otherwise noted.



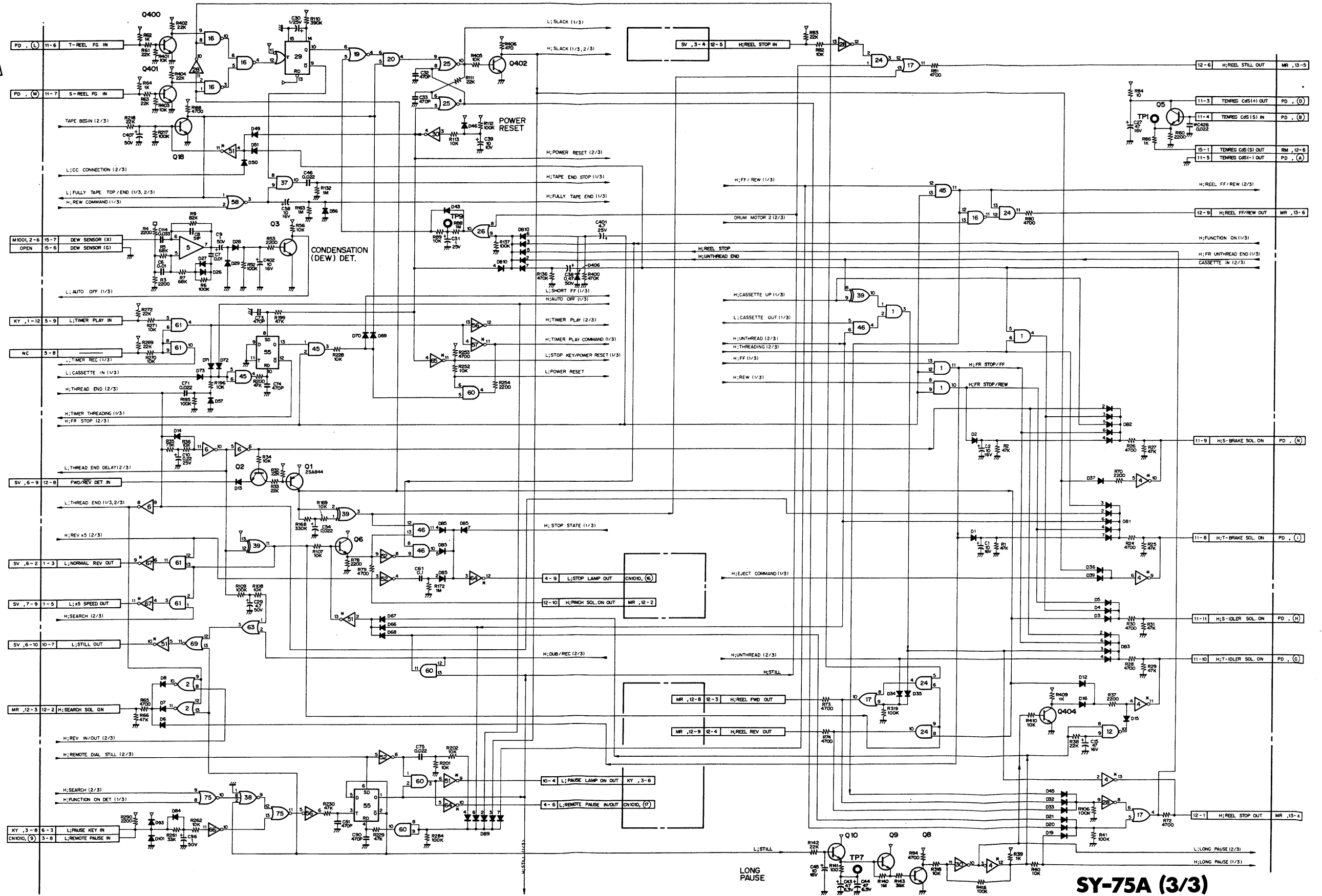
SY-75A (2/3)

• All diodes are 1S1555 unless otherwise noted.
 • All transistors are 2SC1364 unless otherwise noted.

SY-75A (3/3)

SY-75A (3/3)
(SYSTEM CONTROL)

S/N UP TO 14740 (AEP)
S/N UP TO 12210 (UK)
S/N UP TO 10300 (U/C)

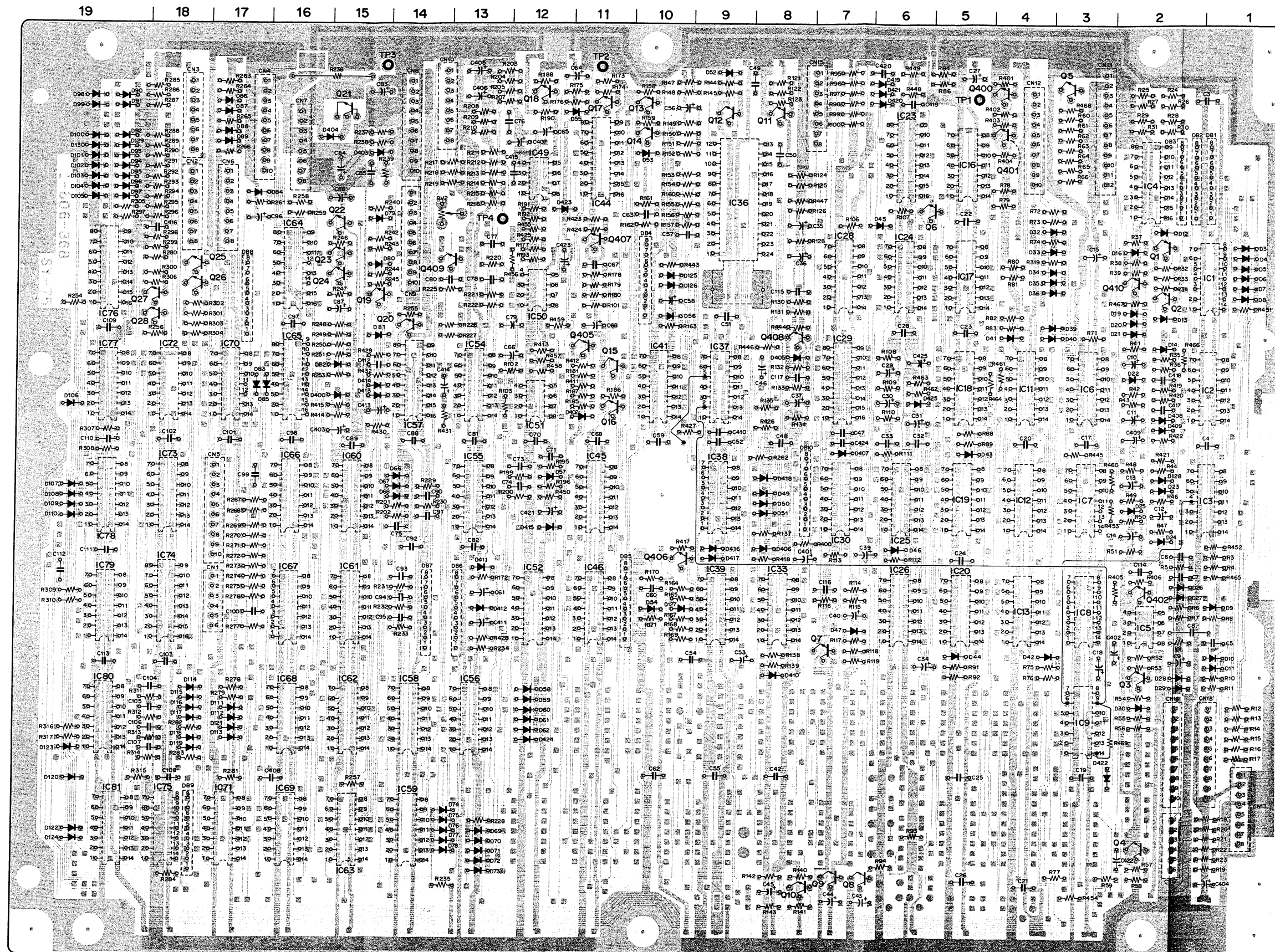
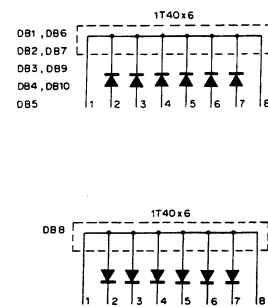


SY-75A (3/3)

- All diodes are 1S1555 unless otherwise noted.
- All transistors are 2SC1364 unless otherwise noted.

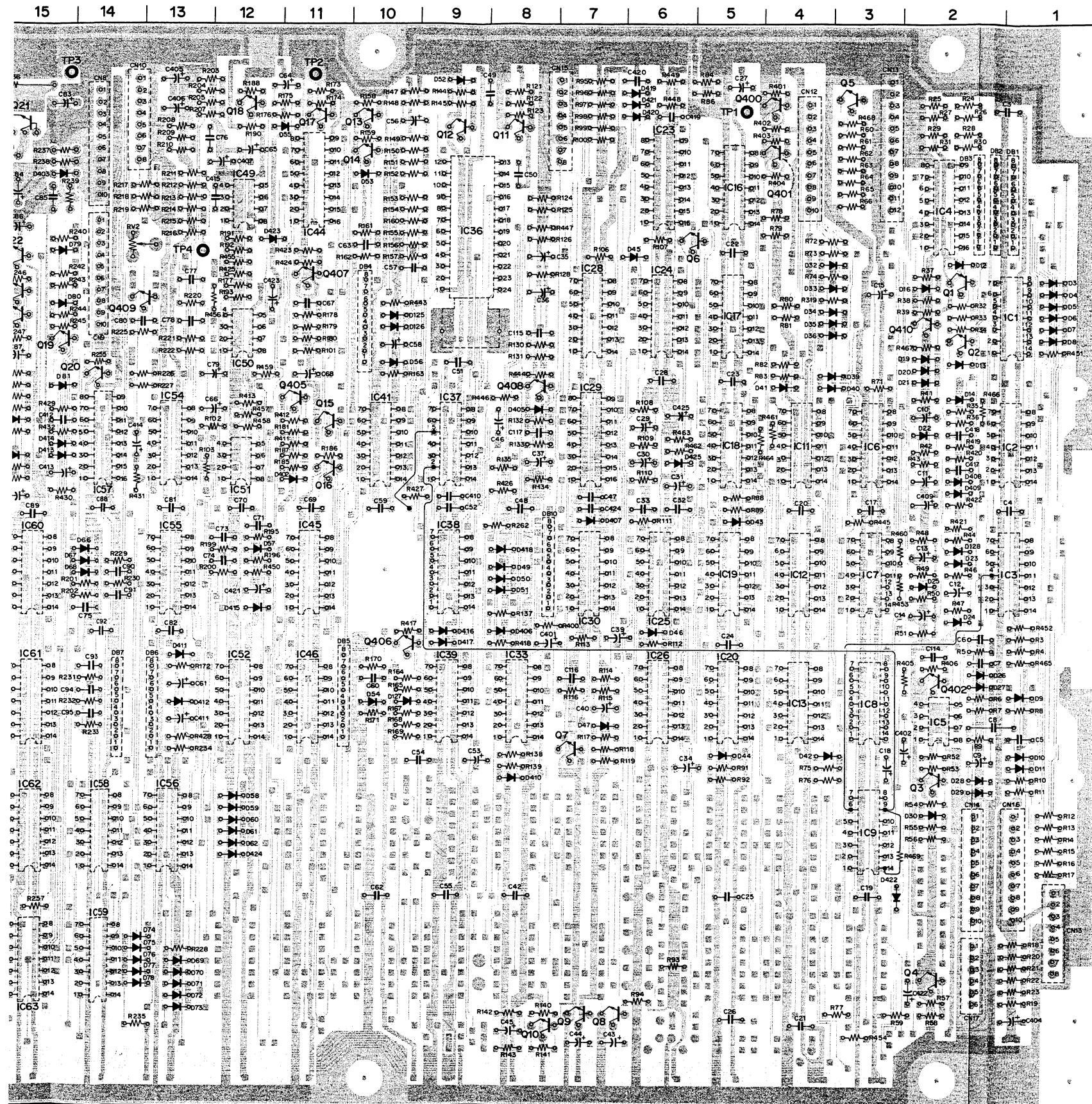


* All transistors are 2SC1364 unless otherwise noted.

SY-75A
(SYSTEM CONTROL)S/N 14741 TO 16290 (AEP)
S/N 12211 TO 12660 (UK)

SY-75A - SOLDERING SIDE -

SY-75A SY-75A



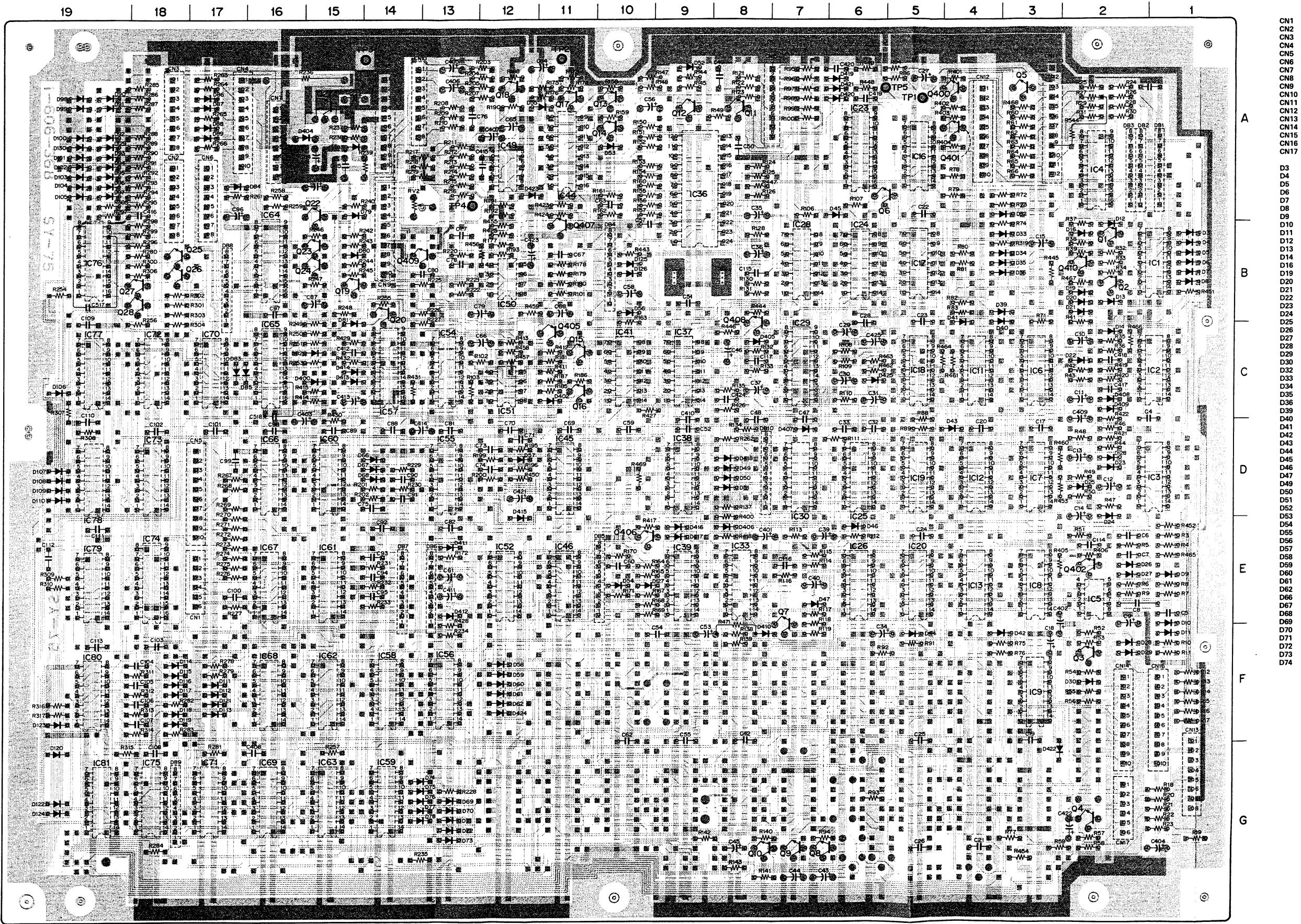
SY-75A - SOLDERING SIDE -

CN1	E - 17	D86	A - 17	IC26	E - 6
CN2	A - 18	D87	A - 17	IC28	B - 7
CN3	A - 18	D88	A - 17	IC29	C - 7
CN4	A - 17	D89	A - 17	IC30	D - 7
CN5	D - 17	D90	A - 19	IC33	E - 8
CN6	A - 17	D91	A - 19	IC36	A - 9
CN7	A - 16	D92	A - 19	IC37	C - 9
CN8	A - 14	D93	A - 19	IC38	D - 9
CN9	B - 14	D94	A - 19	IC39	E - 9
CN10	A - 14	D95	A - 19	IC41	C - 10
CN11	A - 3	D96	A - 19	IC44	A - 11
CN12	A - 4	D97	A - 19	IC45	D - 11
CN13	G - 1	D98	A - 19	IC46	E - 11
CN14	F - 2	D99	A - 19	IC49	A - 12
CN15	A - 7	D100	A - 19	IC50	B - 12
CN16	F - 1	D101	A - 19	IC51	C - 12
CN17	G - 2	D102	A - 19	IC52	E - 12
		D103	A - 19	IC54	C - 13
		D104	A - 19	IC55	D - 13
		D105	A - 19	IC56	F - 13
		D106	C - 19	IC57	C - 14
		D107	D - 19	IC58	F - 14
		D108	D - 19	IC59	G - 14
		D109	D - 19	IC60	D - 15
		D110	D - 19	IC61	E - 15
		D111	F - 17	IC62	F - 15
		D112	F - 17	IC63	G - 15
		D113	F - 17	IC64	B - 16
		D114	F - 18	IC65	C - 16
		D115	F - 18	IC66	D - 16
		D116	F - 18	IC67	E - 16
		D117	F - 18	IC68	F - 16
		D118	F - 18	IC69	G - 16
		D119	F - 18	IC70	C - 17
		D120	G - 19	IC71	G - 17
		D121	F - 17	IC72	C - 18
		D122	G - 19	IC73	D - 18
		D123	F - 18	IC74	E - 18
		D124	F - 18	IC75	G - 18
		D125	B - 10	IC76	B - 19
		D126	B - 10	IC77	C - 19
		D127	E - 10	IC78	D - 19
		D128	D - 2	IC79	E - 19
		D129	A - 19	IC80	F - 19
		D130	A - 19	IC81	G - 19
		D131	C - 15		
		D132	C - 11		
		D133	C - 11		
		D134	C - 11		
		D135	C - 11		
		D136	C - 11		
		D137	C - 11		
		D138	C - 11		
		D139	C - 11		
		D140	C - 11		
		D141	C - 11		
		D142	C - 11		
		D143	C - 11		
		D144	C - 11		
		D145	C - 11		
		D146	C - 11		
		D147	C - 11		
		D148	C - 11		
		D149	C - 11		
		D150	C - 11		
		D151	C - 11		
		D152	C - 11		
		D153	C - 11		
		D154	C - 11		
		D155	C - 11		
		D156	C - 11		
		D157	C - 11		
		D158	C - 11		
		D159	C - 11		
		D160	C - 11		
		D161	C - 11		
		D162	C - 11		
		D163	C - 11		
		D164	C - 11		
		D165	C - 11		
		D166	C - 11		
		D167	C - 11		
		D168	C - 11		
		D169	C - 11		
		D170	C - 11		
		D171	C - 11		
		D172	C - 11		
		D173	C - 11		
		D174	C - 11		
		D175	C - 11		
		D176	C - 11		
		D177	C - 11		
		D178	C - 11		
		D179	C - 11		
		D180	C - 11		
		D181	C - 11		
		D182	C - 11		
		D183	C - 11		
		D184	C - 11		
		D185	C - 11		

REF. NO.	TYPE	12V PIN	5V PIN	GND PIN
IC1	TC4081BP	14	7	
IC2	TC4001BP	14	7	
IC3	TC4081BP	14	7	
IC4	TD62302P	9	8	
IC5	PC4558C	8	4	
IC6	TC4069UBP	14	7	
IC7	TC4081BP	14	7	
IC8	TC4001BP	14	7	
IC9	M54529P	14	7	
IC11	TC4081BP	14	7	
IC12	TC4011BP	14	7	
IC13	TC4071BP	14	7	
IC16	TC4011BP	14	7	
IC17	TC4071BP	14	7	
IC18	TC4073BP	14	7	
IC19	TC4001BP	14	7	
IC20	TC4081BP	14	7	
IC23	PC4558C	8	4	
IC24	TC4081BP	14	7	
IC25	TC4001BP	14	7	
IC26	TC4071BP	14	7	
IC28	TC4069UBP	14	7	
IC29	HD14538BP	16	8	
IC30	MC14584BCP	14	7	
IC33	TC4075BP	14	7	
IC36	CX757	14	7	
IC37	TC4081BP	14	7	
IC38	TC4025BP	14	7	
IC39	TC4030BP	14	7	
IC41	TC4073BP	14	7	
IC44	TD62302P	9	8	
IC45	TC4081BP	14	7	
IC46	TC4081BP	14	7	
IC49	NJM2903D	4	4	
IC50	NJM4558D-D	8	4	
IC51	PC4558C	8	4	
IC52	TC4069UBP	14	7	
IC54	TC4011BP	14	7	
IC55	TC4013BP	14	7	
IC56	TC4069UBP	14	7	
IC57	MC14538BCP	16	8	
IC58	TC4001BP	14	7	
IC59	TC4081BP	14	7	
IC60	TC4081BP	14	7	
IC61	TC4081BP	14	7	
IC62	TC4069UBP	14	7	
IC63	TC4071BP	14	7	
IC64	TD62302P	9	8	
IC65	TD62302P	9	8	
IC66	TC4069UBP	14	7	
IC67	M54529P	14	7	
IC68	TC4011BP	14	7	
IC69	TC4001BP	14	7	
IC70	TC4081BP	14	7	
IC71	TC4081BP	14	7	
IC72	TC4013BP	14	7	
IC73	TC4073BP	14	7	
IC74	TC4520BP	16	8	
IC75	TC4001BP	14	7	
IC76	TD62302P	9	8	
IC77	TC4081BP	14	7	
IC78	TC4025BP	14	7	
IC79	TC4069UBP	14	7	
IC80	TC4001BP	14	7	
IC81	TC4081BP	14	7	

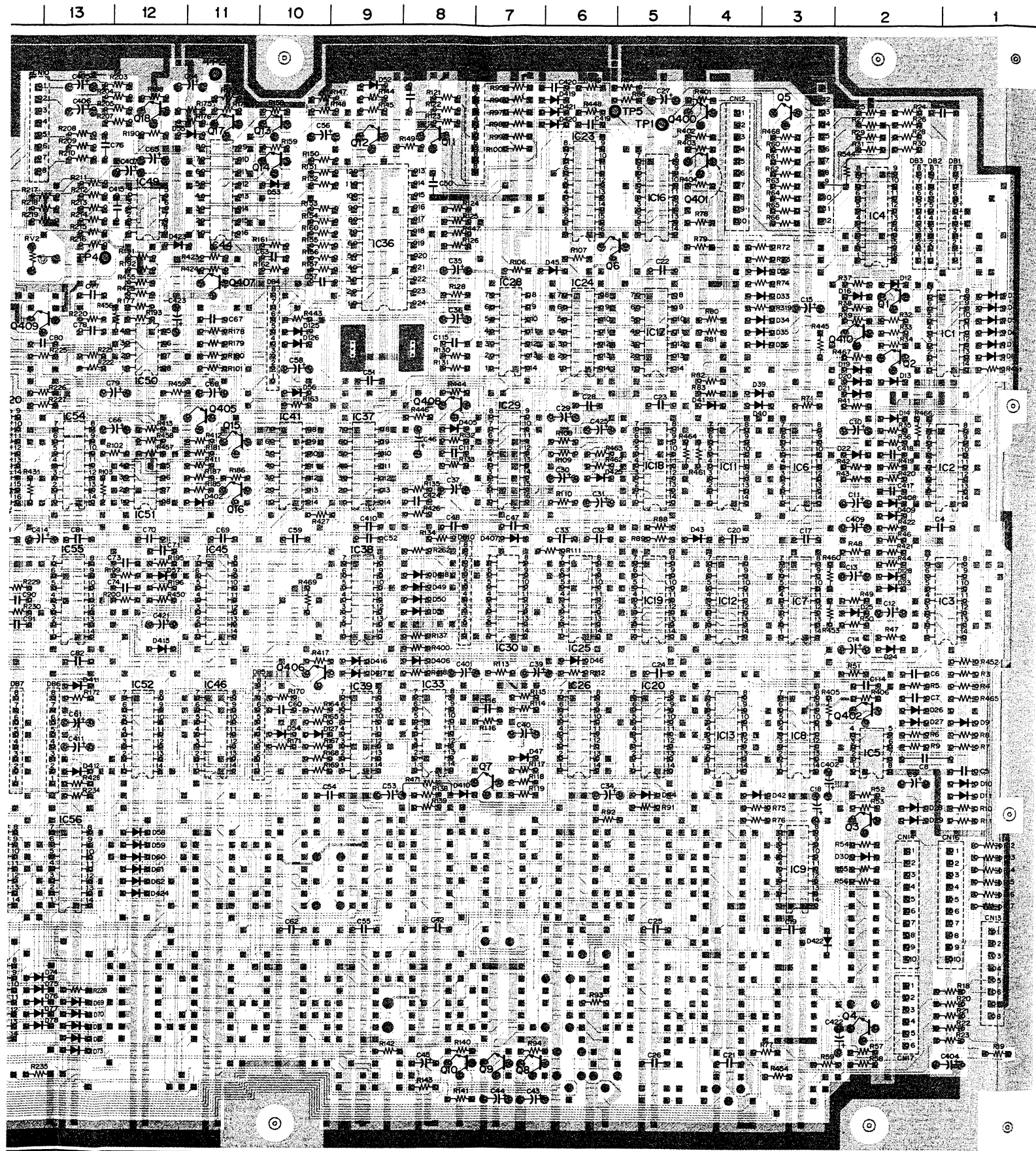
SY-75A
(SYSTEM CONTROL)

S/N 16291 AND LATER (AEP)
S/N 12661 AND LATER (UK)
S/N 10301 AND LATER (U/C)



SY-75A - SOLDERING SIDE -
1-606-368-15
VP-5000
VP-5030

SY-75A SY-75A



SY-75A - SOLDERING SIDE -
1-506-368-15
VP-5000
VP-5030

13-77 (c)

CN1	E-17	D75	G-13	D425	C-6	Q1	B-2
CN2	A-18	D76	G-13	D81	A-1	Q2	B-2
CN3	A-18	D77	G-13	D82	A-2	Q3	F-2
CN4	A-17	D78	G-13	D83	A-2	Q4	G-2
CN5	D-17	D79	A-15	D84	B-10	Q5	A-3
CN6	A-17	D80	B-15	D85	E-10	Q6	A-6
CN7	A-16	D81	B-15	D86	E-13	Q7	E-7
CN8	A-14	D82	C-15	D87	E-14	Q8	G-7
CN9	B-14	D83	C-17	D88	B-17	Q9	G-7
CN10	A-14	D84	A-17	D89	G-18	Q10	G-8
CN11	A-3	D85	C-17	D90	A-19	Q11	A-8
CN12	A-4	D86	A-17	D91	A-19	Q12	A-9
CN13	G-1	D87	A-17	D92	A-19	Q13	A-10
CN14	F-2	D88	A-17	D93	A-19	Q14	A-10
CN15	A-8	D89	A-17	D94	A-19	Q15	C-11
CN16	F-1	D90	A-19	D95	A-19	Q16	C-11
CN17	G-2	D91	A-19	D96	A-19	Q17	A-11
		D92	A-19	D97	A-19	Q18	A-12
		D93	A-19	D98	A-19	Q19	B-15
		D94	A-19	D99	A-19	Q20	B-14
		D95	A-19	D100	A-19	Q21	A-15
		D96	A-19	D101	A-19	Q22	A-15
		D97	A-19	D102	A-19	Q23	B-15
		D98	A-19	D103	A-19	Q24	B-15
		D99	A-19	D104	A-19	Q25	B-18
		D100	A-19	D105	A-19	Q26	B-18
		D101	A-19	D106	C-19	Q27	B-18
		D102	A-19	D107	D-19	Q28	B-18
		D103	A-19	D108	D-19	Q29	B-18
		D104	A-19	D109	D-19	Q30	A-4
		D105	A-19	D110	D-19	Q31	A-4
		D106	C-19	D111	F-17	Q32	A-4
		D107	D-19	D112	F-17	Q33	A-4
		D108	D-19	D113	F-17	Q34	A-4
		D109	D-19	D114	F-18	Q35	A-4
		D110	D-19	D115	F-18	Q36	A-4
		D111	F-17	D116	F-18	Q37	A-4
		D112	F-17	D117	F-18	Q38	A-4
		D113	F-17	D118	F-18	Q39	A-4
		D114	F-18	D119	F-18	Q40	A-4
		D115	F-18	D120	G-19	Q41	A-4
		D116	F-18	D121	F-17	Q42	A-4
		D117	F-18	D122	G-19	Q43	A-4
		D118	F-18	D123	F-19	Q44	A-4
		D119	F-18	D124	G-19	Q45	A-4
		D120	G-19	D125	B-10	Q46	A-4
		D121	F-17	D126	B-10	Q47	A-4
		D122	G-19	D127	E-10	Q48	A-4
		D123	F-19	D128	D-2	Q49	A-4
		D124	G-19	D129	A-19	Q50	A-4
		D125	B-10	D130	A-19	Q51	A-4
		D126	B-10	D131	A-19	Q52	A-4
		D127	E-10	D132	A-19	Q53	A-4
		D128	D-2	D133	A-19	Q54	A-4
		D129	A-19	D134	A-19	Q55	A-4
		D130	A-19	D135	A-19	Q56	A-4
		D131	A-19	D136	A-19	Q57	A-4
		D132	A-19	D137	A-19	Q58	A-4
		D133	A-19	D138	A-19	Q59	A-4
		D134	A-19	D139	A-19	Q60	A-4
		D135	A-19	D140	A-19	Q61	A-4
		D136	A-19	D141	A-19	Q62	A-4
		D137	A-19	D142	A-19	Q63	A-4
		D138	A-19	D143	A-19	Q64	A-4
		D139	A-19	D144	A-19	Q65	A-4
		D140	A-19	D145	A-19	Q66	A-4
		D141	A-19	D146	A-19	Q67	A-4
		D142	A-19	D147	A-19	Q68	A-4
		D143	A-19	D148	A-19	Q69	A-4
		D144	A-19	D149	A-19	Q70	A-4
		D145	A-19	D150	A-19	Q71	A-4
		D146	A-19	D151	A-19	Q72	A-4
		D147	A-19	D152	A-19	Q73	A-4
		D148	A-19	D153	A-19	Q74	A-4
		D149	A-19	D154	A-19	Q75	A-4
		D150	A-19	D155	A-19	Q76	A-4
		D151	A-19	D156	A-19	Q77	A-4
		D152	A-19	D157	A-19	Q78	A-4
		D153	A-19	D158	A-19	Q79	A-4
		D154	A-19	D159	A-19	Q80	A-4
		D155	A-19	D160	A-19	Q81	A-4
		D156	A-19	D161	A-19		
		D157	A-19	D162	A-19		
		D158	A-19	D163	A-19		
		D159	A-19	D164	A-19		
		D160	A-19	D165	A-19		
		D161	A-19	D166	A-19		
		D162	A-19	D167	A-19		
		D163	A-19	D168	A-19		
		D164	A-19	D169	A-19		
		D165	A-19	D170	A-19		
		D166	A-19	D171	A-19		
		D167	A-19	D172	A-19		
		D168	A-19	D173	A-19		
		D169	A-19	D174	A-19		
		D170	A-19				
		D171	A-19				
		D172	A-19				
		D173	A-19				
		D174	A-19				

REF. NO.	TYPE	12V PIN	5V PIN	GND PIN
IC1	TC4081BP	8	14	7
IC2	TC4001BP		14	7
IC3	TC4081BP		14	7
IC4	TD62302P		9	8
IC5	PC4558C			4
IC6	TC4069UBP		14	7
IC7	TC4081BP		14	7
IC8	TC4001BP		14	7
IC9	M54529P		14	7
IC11	TC4081BP		14	7
IC12	TC4011BP		14	7
IC13	TC4071BP		14	7
IC16	TC4011BP		14	7
IC17	TC4071BP		14	7
IC18	TC4073BP		14	7
IC19	TC4001BP		14	7
IC20	TC4081BP		14	7
IC23	TC4020BP		16	8
IC24	TC4081BP		14	7
IC25	TC4001BP		14	7
IC26	TC4071BP		14	7
IC28	TC4069UBP		14	7
IC29	HD14538BP		16	8
IC30	MC14584BP		14	7
IC33	TC4075BP		14	7
IC36	CX757			
IC37	TC4081BP		14	7
IC38	TC4025BP		14	7
IC39	TC4030BP		14	7
IC41	TC4073BP		16	8
IC44	TD62302P		9	8
IC45	TC4081BP		14	7
IC46	TC4081BP		14	7
IC49	NJM2903D		4	4
IC50	NJM4558D-D		4	4
IC51	PC4558C		14	7
IC52	TC4069UBP		14	7
IC54	TC4011BP		14	7
IC55	TC4013BP		14	7
IC56	TC4069UBP		14	7
IC57	HD14538BP		16	8
IC58	TC4001BP		14	7
IC59	TC4081BP		14	7
IC60	TC4081BP		14	7
IC61	TC4081BP		14	7
IC62	TC4069UBP		14	7
IC63	TC4071BP		14	7
IC64	TD62302P		9	8
IC65	TD62302P		9	8
IC66	TC4069UBP		14	7
IC67	M54529P		14	7
IC68	TC4011BP		14	7
IC69	TC4001BP		14	7
IC70	TC4081BP		14	7
IC71	TC4081BP		14	7
IC72	TC4013BP		14	7
IC73	TC4073BP		14	7
IC74	TC4520BP		16	8
IC75	TC4001BP		14	7
IC76	TD62302P		9	8
IC77	TC4081BP		14	7
IC78	TC4025BP		14	7
IC79	TC4069UBP		14	7
IC80	TC4001BP		14	7
IC81	TC4081BP		14	7

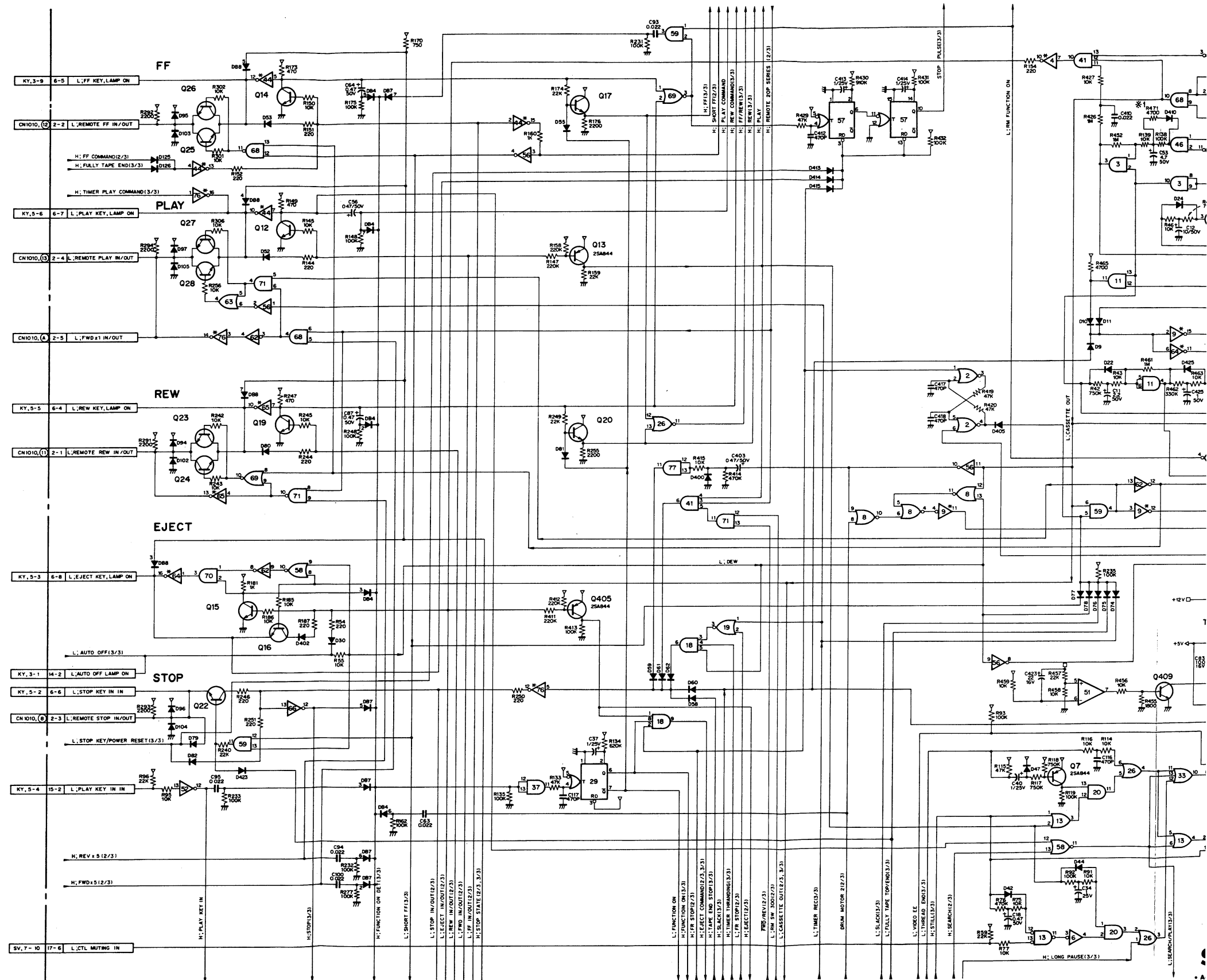
13-78 (c)

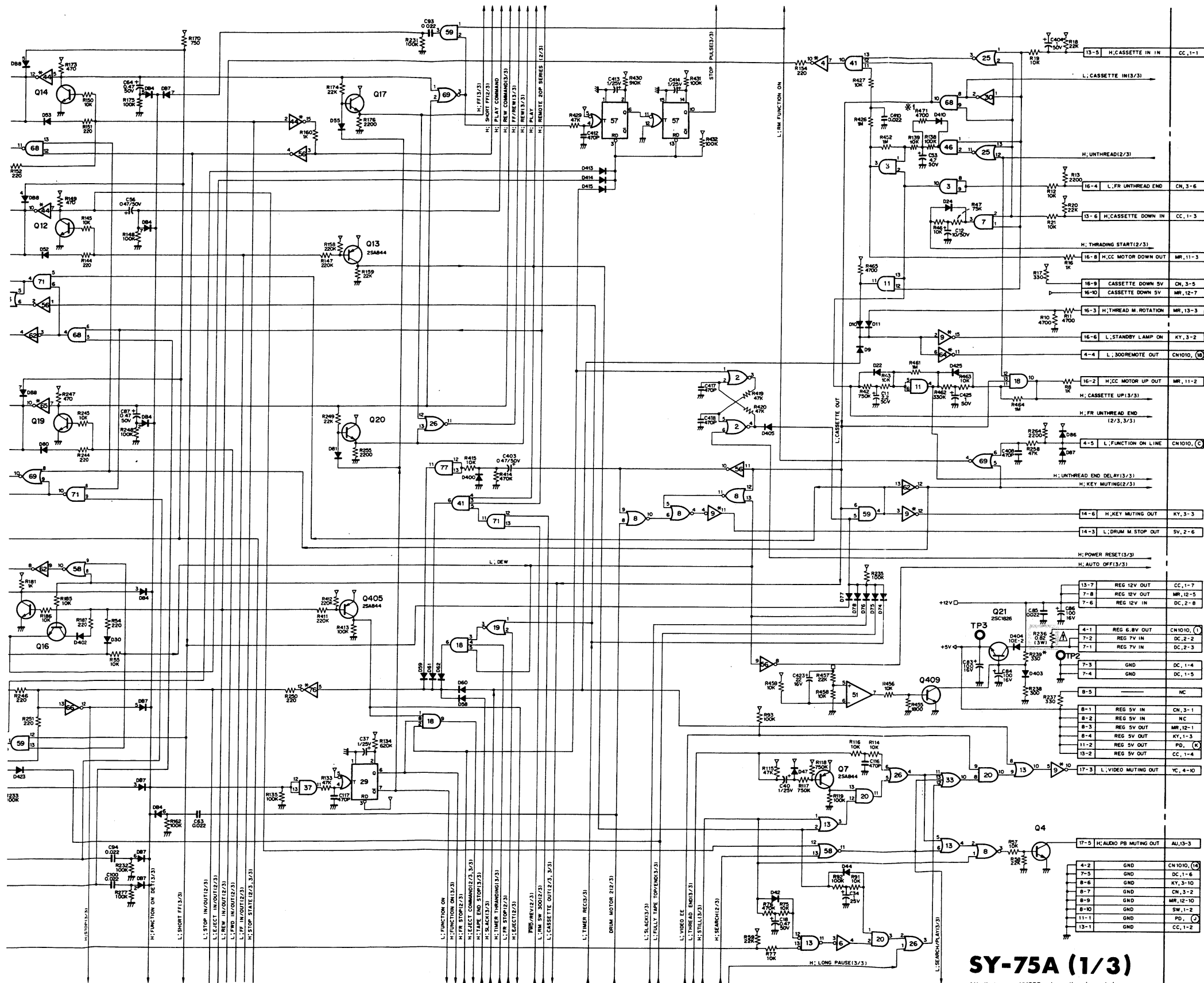
SY-75A (1/3)

SY-75A (1/3)
(SYSTEM CONTROL)

**S/N 14741 AND LATER (AEP)
S/N 12211 AND LATER (UK)
S/N 10301 AND LATER (U/C)**

NOTE:		
MARK	CHANGE INFORMATION	SERIAL NO.
※1	R471 4700 ADDED	VP-5000 U/C: 23851 ~
		" J: 11201 ~
		VP-5030 AEP: 16291 ~
		" UK: 12661 ~
		" U/C: 10301 ~





SY-75A (1/3)

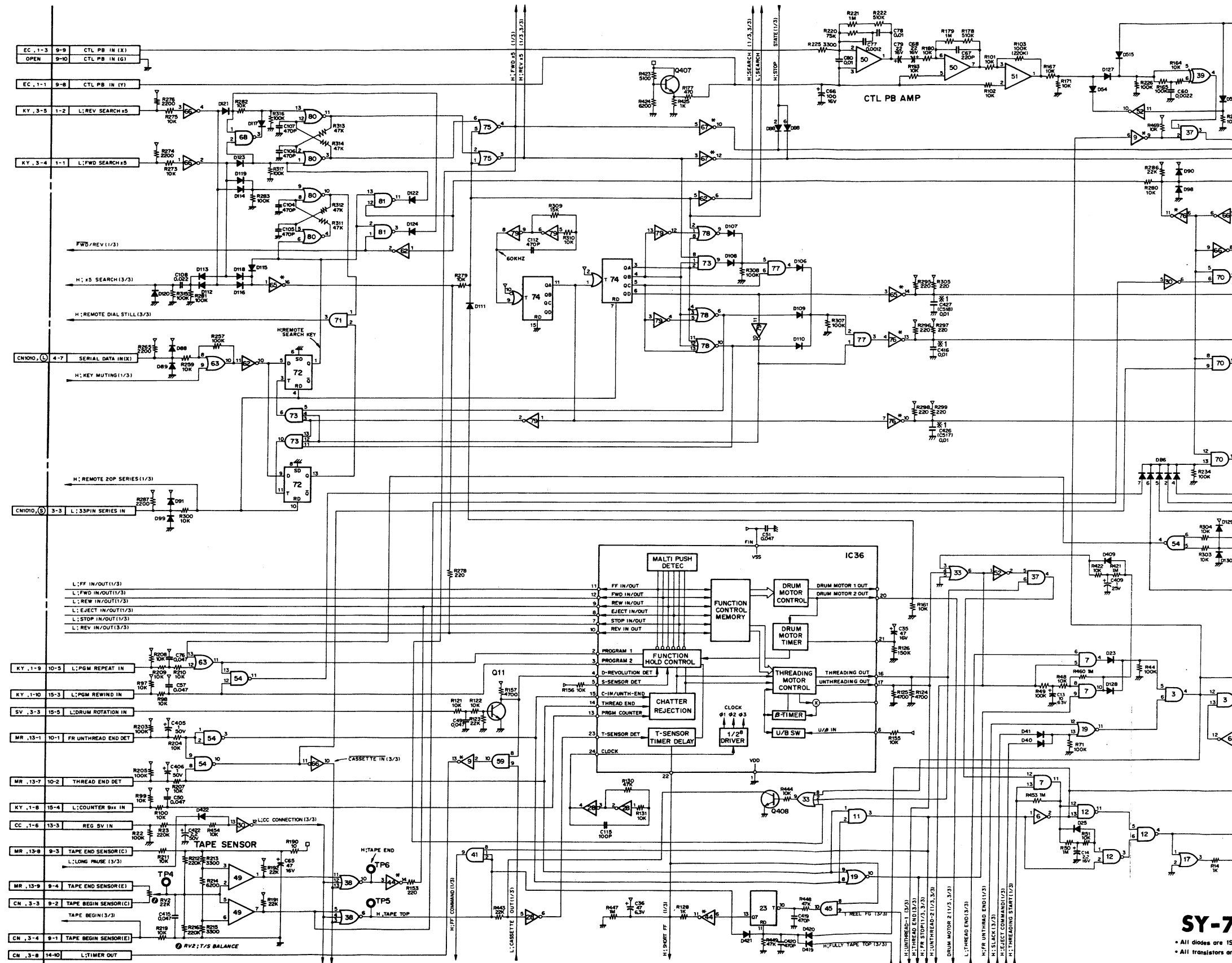
• All diodes are 1S1555 unless otherwise noted.
• All transistors are 2SC1364 unless otherwise noted.

NOTE: The shaded and -marked components are critical to safety. Replace only with same components as specified.

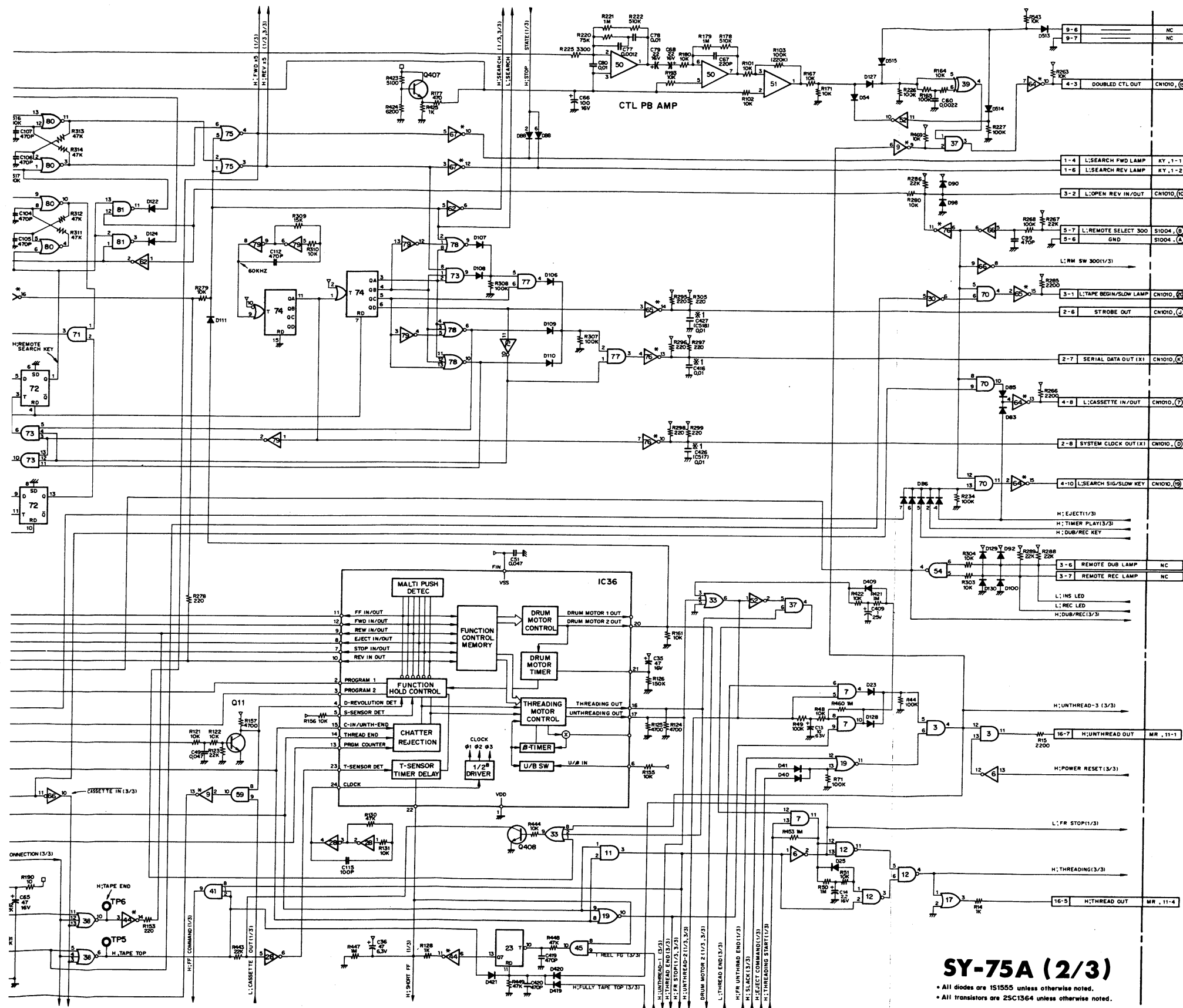
SY-75A (2/3)
(SYSTEM CONTROL)

**S/N 14741 AND LATER (AEP)
S/N 12211 AND LATER (UK)
S/N 10301 AND LATER (U/C)**

NOTE:		
MARK	CHANGE INFORMATION	SERIAL NO.
※1	C416 0.001 → 0.01	VP-5000 U/C: 22851 ~
	C426 (C517) 0.01	“ J: 11201 ~
	C427 (C518) ADDED	VP-5030 AEP: 16291 ~
		“ UK: 12661 ~
		“ U/C: 10301 ~



SY-7

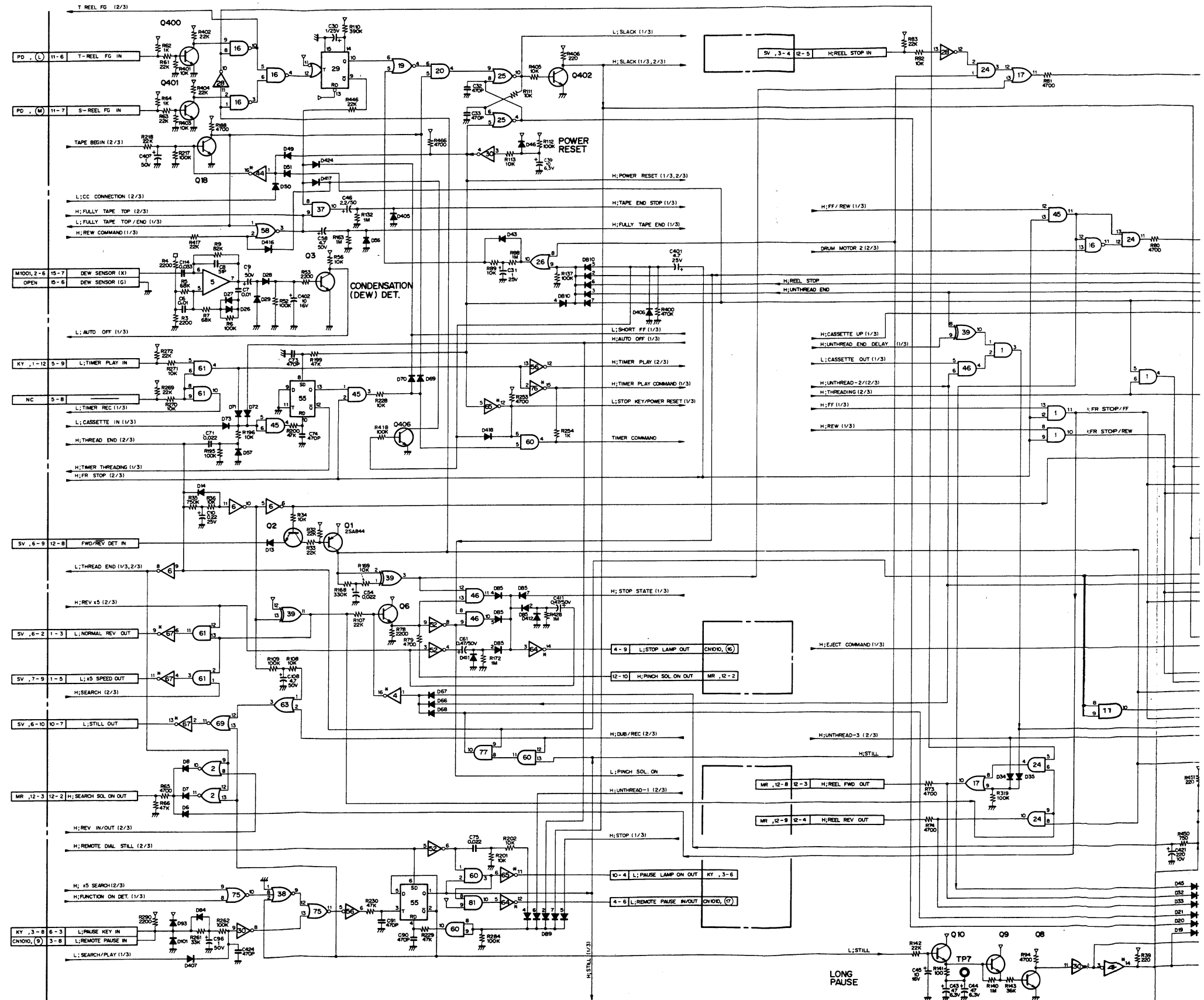


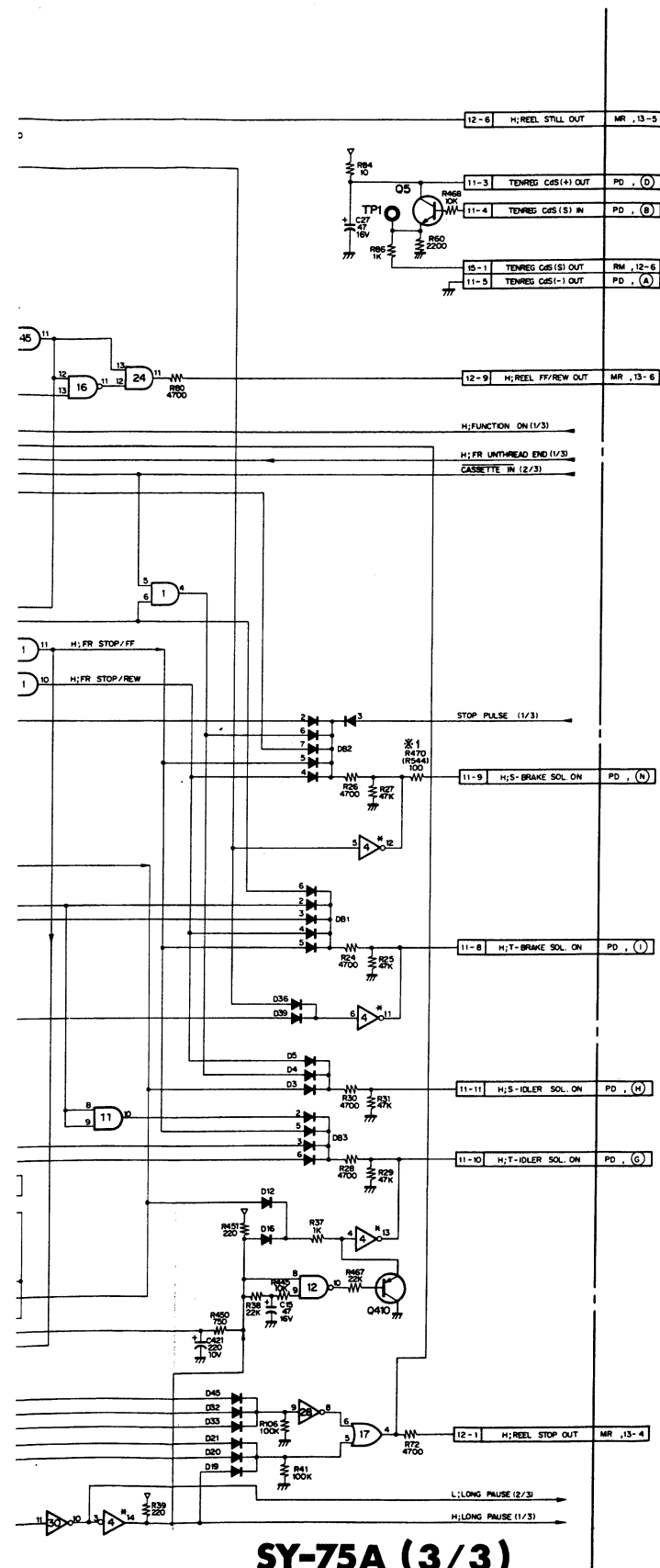
SY-75A (3/3) SY-75A (3/3)

SY-75A (3/3)
(SYSTEM CONTROL)

S/N 14741 AND LATER (AEP)
S/N 12211 AND LATER (UK)
S/N 10301 AND LATER (U/C)

MARK	CHANGE INFORMATION	SERIAL NO.
*1	R470 100 ADDED (R544)	VP-5000 U/C: 22851 ~ " J: 11201 ~ VP-5030 AEP: 16291 ~ " UK: 12861 ~ " U/C: 10301 ~

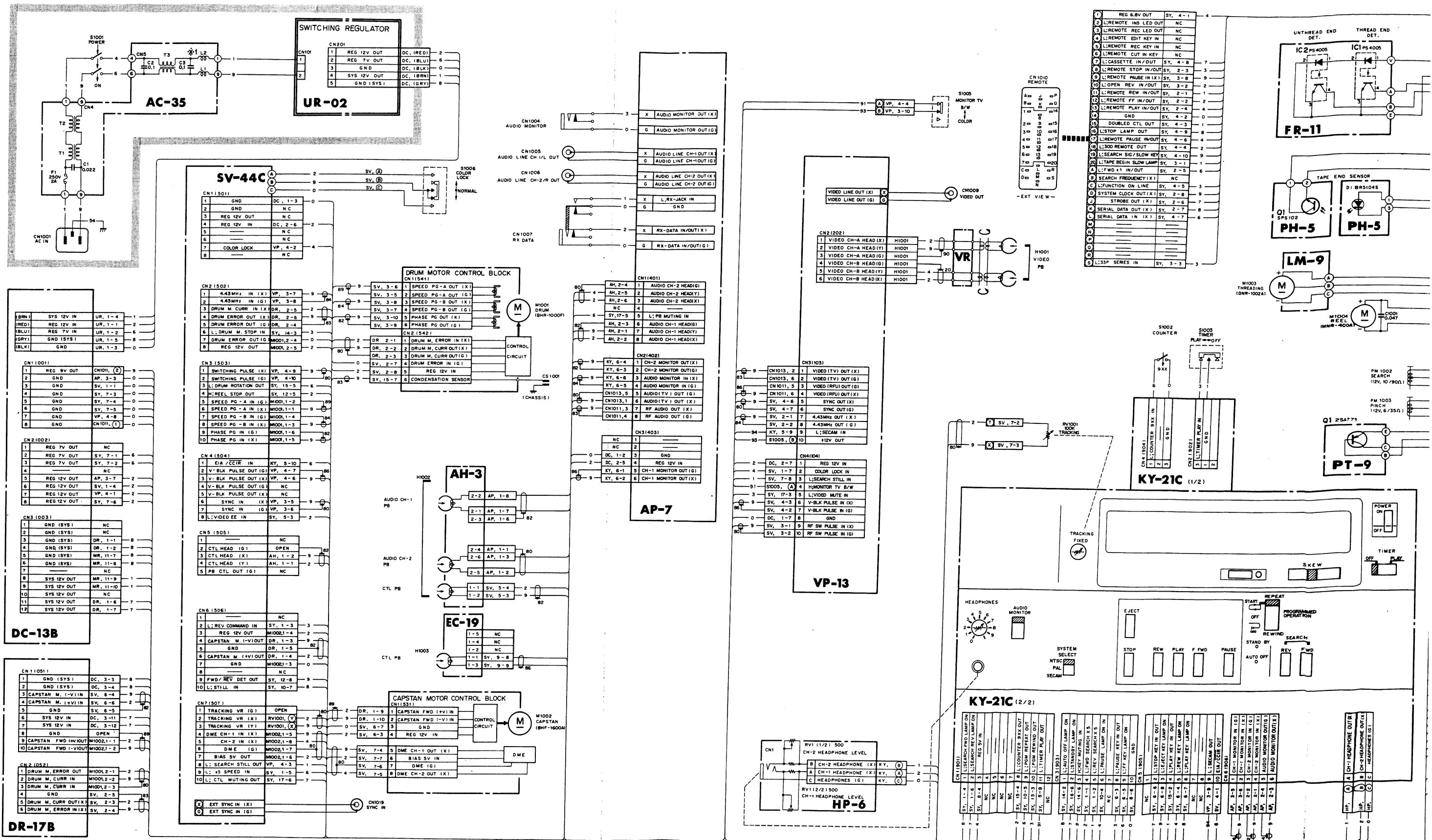




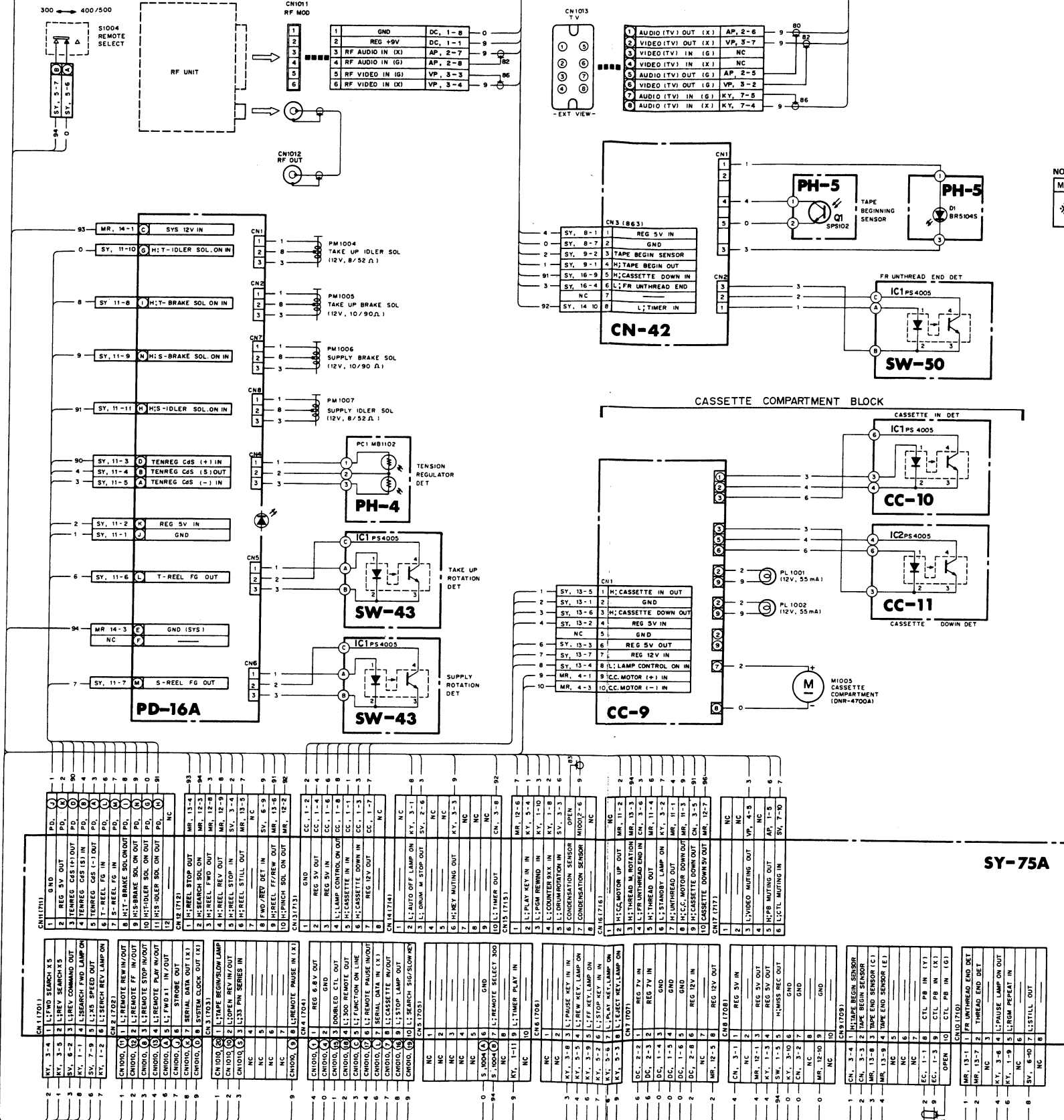
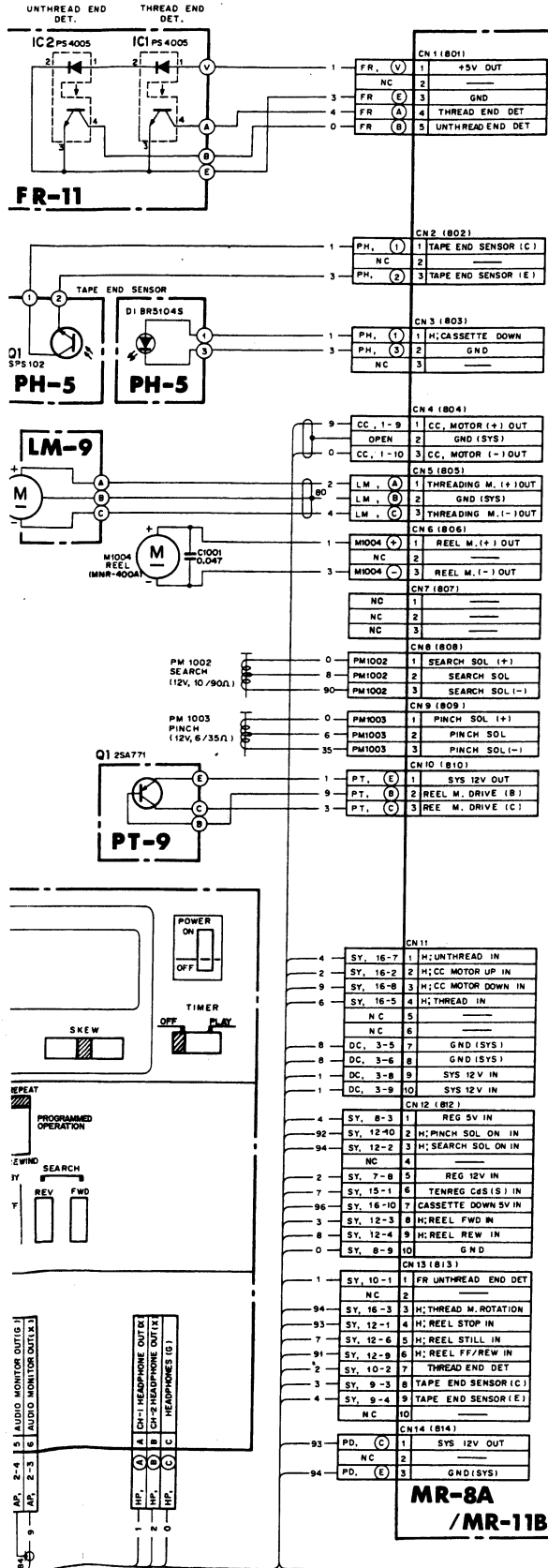
NOTE: The shaded and -marked components are critical to safety.
Replace only with same components as specified.

FRAME FRAME

FRAME



FRAME



MARK	CHANGE INFORMATION	SERIAL NO.
*:1	AC-35 BOARD C3 0.22 → 0.1 L1, L2 ADDED	AEP: 17291 ~ UK: 14361 ~ U/C: 10301 ~

NOTE: The shaded and -marked components are critical to safety.
Replace only with same components as specified.

SECTION 14

SPARE PARTS AND FIXTURE

14-1. PARTS INFORMATION

- Safety Related Component Warning**
Components identified by shading marked with  on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.
- Replacement Parts supplied from Sony Parts Center** will sometimes have different shape and outside view from the parts which actually in use. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts."
 - This manual's exploded views and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present".
 - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.
- Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
- Item with no part number and/or no description are not stocked because they are seldom required for routine service.
- (T) after a spring description is shown on the exploded views in order to indicate the number of a spring turn required for the use.
(Example) Spring, tension (24T); This spring must be cut at its 24th turn for actual use.

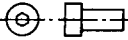
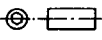
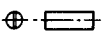
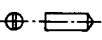
14-2. EXPLODED VIEW

- Exploded views are composed of the following blocks.
 - Reel Chassis (1)
 - Supply reel table
 - Supply tension regulator arm
 - Search solenoid
 - Supply main brake
 - Reel motor
 - Reel Chassis (2)
 - Take-up reel table
 - FF/REW idler
 - Take-up main brake
 - Take-up tension regulator arm
 - R brake
 - Reel Chassis (3)
 - Supply idler solenoid
 - Take-up idler solenoid
 - FF/REW idler pulley
 - Supply brake solenoid
 - Take-up brake solenoid
 - Threading
 - Threading ring
 - Gear box
 - T correction guide
 - Tape beginning sensor
 - FR detector
 - Threading Arm
 - T drawer arm
 - S drawer arm
 - Drawer lever
 - Drum/Capstan
 - Head drum
 - Capstan motor
 - Audio/CTL head
 - Erase Head Base
 - Erase head base
 - S guard
 - Pinch Lever
 - Pinch lever
 - Pinch roller pre-set cam
 - Pinch solenoid
 - Cassette-up Compartment
 - Function Control
 - Function control panel (except ornamental panel)
 - Chassis (1)
 - Chassis (bottom view)
 - Chassis (2)
 - Chassis (rear view)
 - Meter Panel
 - Chassis (3)
 - Chassis (top view)
 - Printed Circuit Board
 - Printed circuit board (except bottom block)
 - Ornamental Panel (1)
 - Ornamental panel (except control panel)
 - Ornamental Panel (2)
 - Control panel
 - Switching Regulator (UR-02)

	PS 	PSW 	B (BZn N) 	B (Cr-N) 	PTT 	PTTWH 
2.6 x 4	7-621-972-05	—	7-621-912-10	7-621-912-18	—	—
2.6 x 6	7-621-972-25	7-621-981-15	7-621-912-30	7-621-912-38	—	—
2.6 x 8	7-621-972-35	7-621-981-25	7-621-912-40	7-621-912-48	—	—
3 x 5	7-686-446-01	—	—	—	—	—
3 x 6	7-686-447-01	7-686-527-01	7-686-624-09	7-686-624-04	7-687-411-31	7-687-510-31
3 x 8	7-686-448-01	7-686-528-01	7-686-625-09	7-686-625-04	7-687-412-31	7-687-511-31
3 x 10	7-686-449-01	7-686-529-01	7-686-626-09	7-686-626-04	7-687-413-31	7-687-512-31
3 x 12	7-686-450-01	7-686-530-01	7-686-627-09	7-686-627-04	7-687-414-31	7-687-513-31
3 x 16	7-686-452-01	7-686-532-01	7-686-629-09	7-686-629-04	—	—
3 x 20	7-686-453-01	7-686-533-01	7-686-630-09	7-686-630-04	—	—
3 x 25	7-686-454-01	7-686-534-01	7-686-631-09	7-686-631-04	—	—
4 x 8	7-686-468-01	7-686-548-01	7-686-635-09	7-686-635-04	—	—
4 x 12	7-686-470-01	7-686-550-01	7-686-637-09	7-686-637-04	—	—
4 x 14	7-686-471-01	—	7-686-638-09	7-686-638-04	—	—
4 x 16	7-686-472-01	—	7-686-639-09	7-686-639-04	—	—
4 x 20	7-686-473-01	—	7-686-640-09	7-686-640-04	—	—

SCREW

WASHER

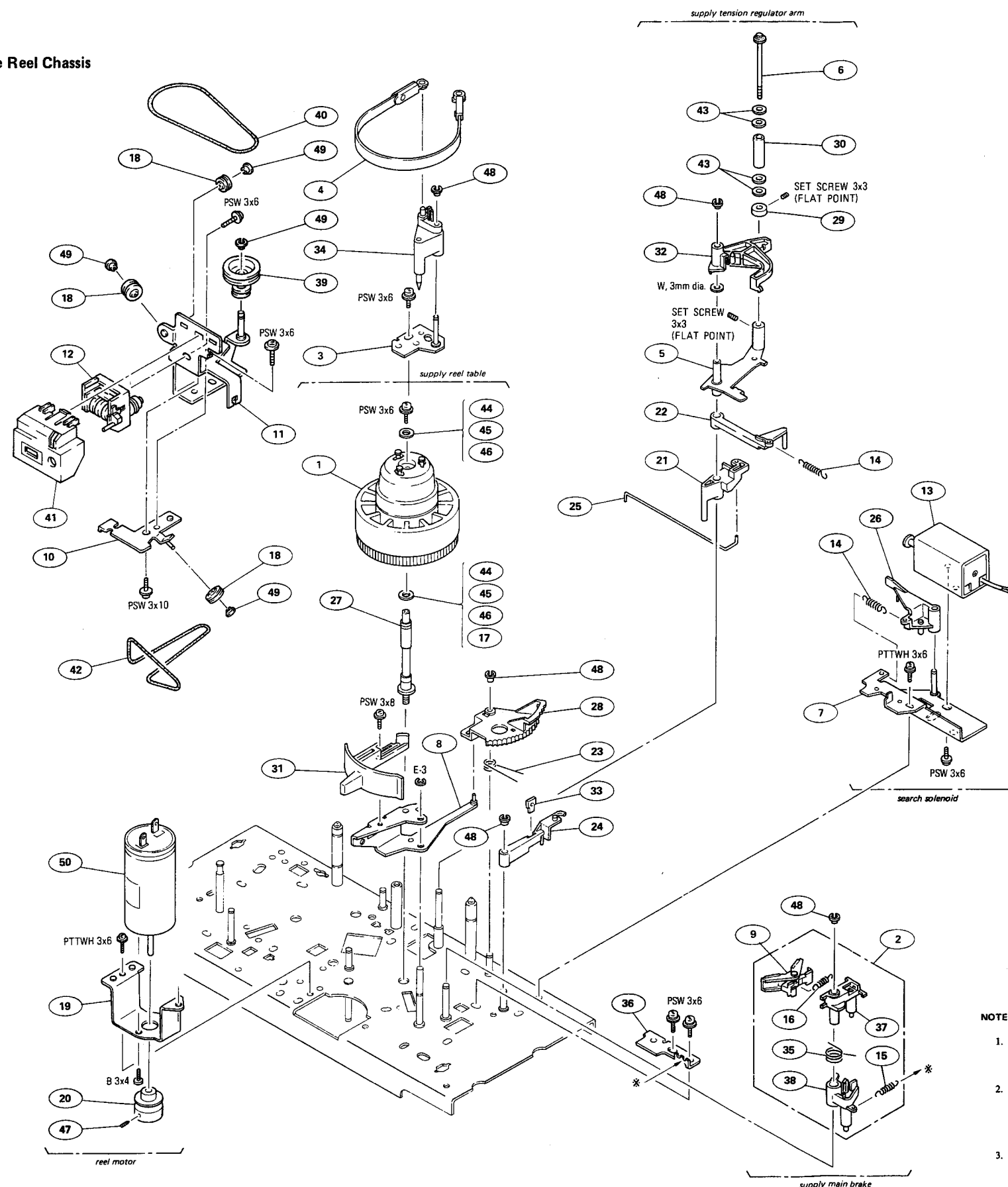
	HEXAGON SOCKET SCREW 	HEXAGON SET SCREW 	(-) SET SCREW FLAT POINT 	(-) SET SCREW CONE POINT 
2.6 x 3	_____	7-621-734-09	_____	_____
2.6 x 4	7-621-996-24	7-621-735-09	_____	_____
2.6 x 5	_____	7-621-736-09	_____	_____
2.6 x 6	7-683-412-05	_____	_____	7-621-712-55
2.6 x 8	7-683-413-05	_____	_____	7-621-712-65
2.6 x 10	_____	_____	_____	7-621-712-75
3 x 4	_____	7-683-238-01	_____	_____
3 x 5	_____	_____	7-683-175-01	_____
3 x 6	7-683-403-04	_____	7-683-176-01	7-683-176-21
3 x 8	7-683-404-04	_____	_____	7-683-177-21
3 x 10	7-683-405-04	_____	_____	7-683-178-21
3 x 12	_____	_____	_____	7-683-179-21

	FLAT WASHER SMALL W. 	FLAT WASHER MIDDLE W. 	SPRING WASHER SW. 	TOOTHED WASHER TYPE B LW. 	HEXAGON NUT N. 
2.6 mm	7-688-002-01	7-688-002-12	7-623-207-22	7-623-421-07	7-622-207-05
3 mm	7-688-003-01	7-688-003-12	7-688-003-11	7-623-422-07	7-684-023-04
4 mm	7-688-004-01	7-688-004-12	7-623-210-22	7-623-423-07	7-684-024-04
5 mm	7-688-005-01	7-688-005-01	7-623-212-22	_____	7-684-025-04

	STOP RING E TYPE E. 
2	7-624-104-04
2.3	7-624-105-04
3	7-624-106-04
4	7-624-108-04
5	7-624-109-04
6	7-624-110-04

REEL CHASSIS (1) REEL CHASSIS (1)

Supply Side Reel Chassis



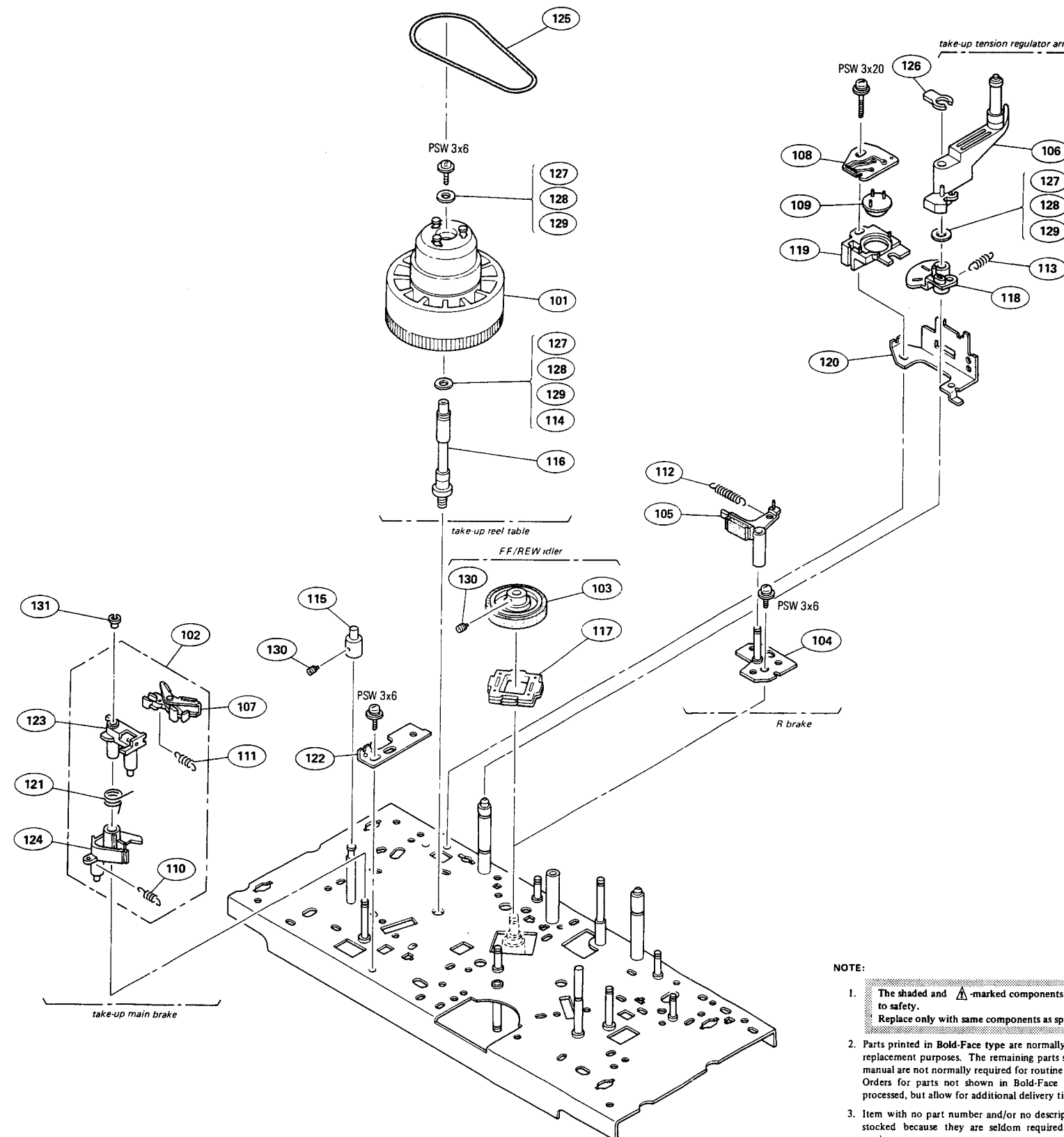
NOTE:

1. The shaded and Δ -marked components are critical to safety. Replace only with same components as specified.
2. Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

No.	Parts No.	Description
1	A-6739-017-B	TABLE (T) ASS'Y, REEL
2	A-6741-038-B	BRAKE ASS'Y, MAIN
3	X-3668-706-0	BASE ASS'Y, S TENSION REGULATOR
4	X-3668-707-0	BAND ASS'Y, S TENSION REGULATOR
5	X-3668-708-0	ARM (A) ASS'Y, S TENSION REGULATOR
6	X-3668-709-0	SHAFT (1) ASS'Y, ROLLER
7	X-3668-717-0	BASE ASS'Y, SEARCH
8	X-3668-725-0	ARM (C) ASS'Y, SKEW
9	X-3668-749-2	HOLDER ASS'Y, LINING
10	X-3672-603-0	BRACKET ASS'Y, PULLEY
11	X-3672-604-0	BRACKET ASS'Y, COUNTER
12	Y-2041-071-5	COUNTER SOLENOID
13	1-454-284-00	SOLENOID
14	3-534-238-XX	SPRING, TENSION (23T)
15	3-535-369-XX	SPRING, TENSION (12T)
16	3-548-124-00	SPRING, TENSION
17	3-645-567-11	SPACER, FLANGE
18	3-660-811-00	ROLLER, GUIDE
19	3-668-783-00	BRACKET, MOTOR
20	3-668-784-00	PULLEY, MOTOR
21	3-668-787-02	ARM, S DETECTION
22	3-668-794-00	ARM (A), SKEW
23	3-668-795-00	SPRING
24	3-668-797-00	ARM, SKEW LOCK
25	3-668-804-00	LINK, DETECTION, TENSION
26	3-668-808-00	ARM, FWD, SEARCH
27	3-668-827-00	SHAFT (S), REEL
28	3-668-835-00	ARM (B), SKEW
29	3-668-874-00	FLANGE (1), LOWER
30	3-668-916-02	ROLLER (1), GUIDE
31	3-668-920-00	LEVER, SKEW
32	3-668-936-00	ARM (B), S TENSION REGULATOR
33	3-668-937-00	CLAW, SKEW LOCK
34	3-668-939-00	ARM, BAND LOCK
35	3-668-966-00	SPRING
36	3-668-967-00	STOPPER, BRAKE
37	3-668-970-00	ARM, BRAKE
38	3-668-971-00	ARM, BRAKE RELEASE
39	3-672-601-00	PULLEY, MIDWAY, COUNTER
40	3-672-602-00	BELT (A), COUNTER
41	3-672-619-00	COVER, COUNTER
42	3-672-626-00	BELT (B), COUNTER
43	3-701-438-01	WASHER, POLY 2.5MM DIA., 0.13T
44	3-701-444-01	WASHER, POLY 6MM DIA., 0.13T
45	3-701-444-11	WASHER, POLY 6MM DIA., 0.25T
46	3-701-444-21	WASHER, POLY 6MM DIA., 0.5T
47	3-701-506-01	SET SCREW, DOUBLE POINT 3x4
48	3-703-074-00	CAP 3, SHAFT
49	3-703-075-00	CAP 2, SHAFT
50	8-835-047-01	MOTOR, DC (MNR-4000A)

REEL CHASSIS (2) REEL CHASSIS (2)

Take-up Side Reel Chassis



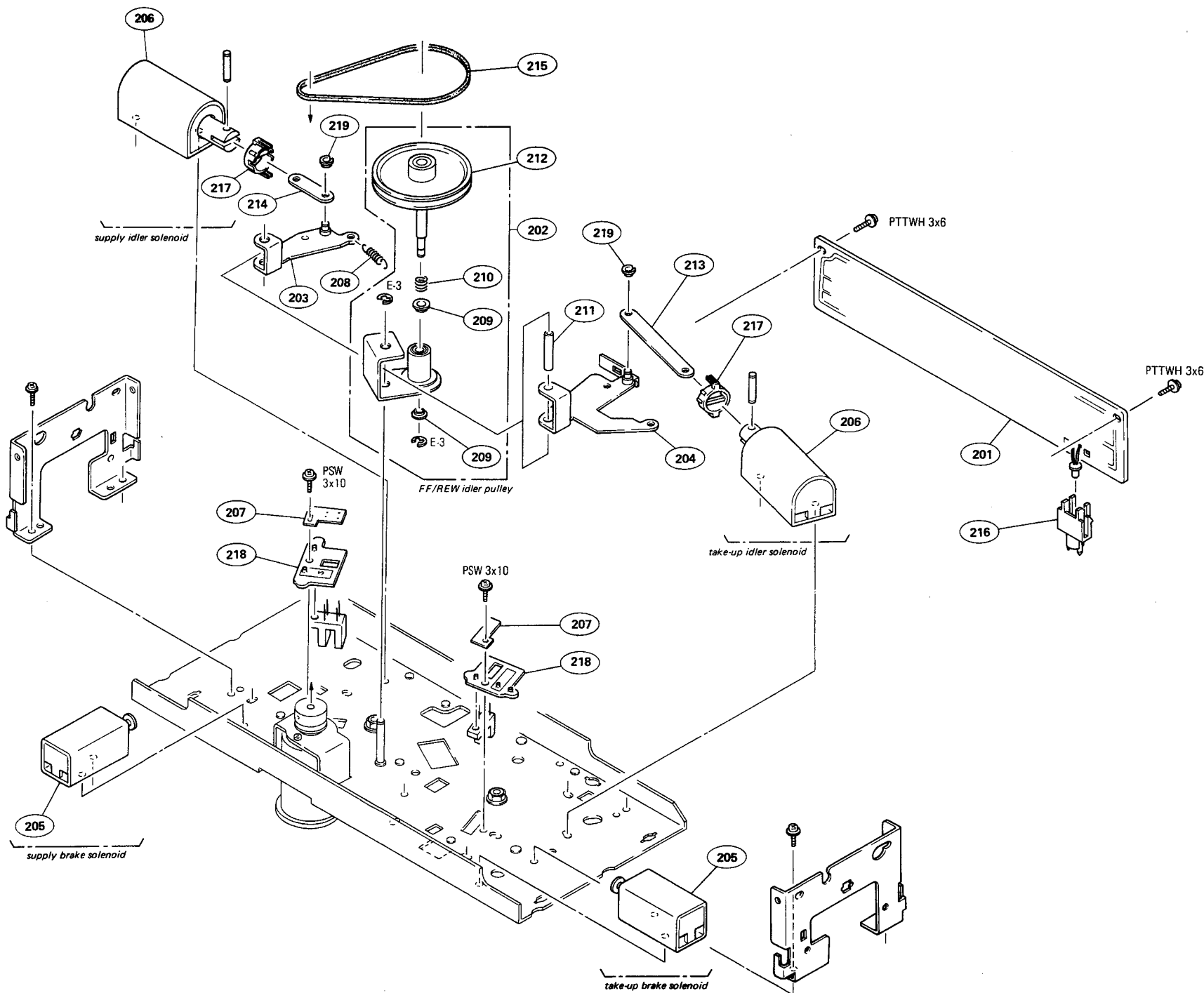
No.	Parts No.	Description
101	A-6739-017-B	TABLE (T) ASS'Y, REEL
102	A-6741-038-B	BRAKE ASS'Y, MAIN
103	X-3646-026-0	IDLER ASS'Y, FF
104	X-3668-705-0	BASE ASS'Y, R BRAKE
105	X-3668-737-0	BRAKE ASS'Y, R
106	X-3668-738-0	ARM ASS'Y, T TENSION REGULATOR
107	X-3668-749-2	HOLDER ASS'Y, LINING
108	1-603-589-00	PRINTED CIRCUIT BOARD, PH-4
109	1-806-232-11	DETECTOR MB-1102/S.N
110	3-535-369-XX	SPRING, TENSION (12T)
111	3-548-124-00	SPRING, TENSION
112	3-549-861-00	SPRING, TENSION
113	3-642-427-00	SPRING, TENSION
114	3-645-567-11	SPACER, FLANGE
115	3-668-031-00	RETAINER (UPPER), CASSETTE
116	3-668-766-00	SHAFT (T), REEL
117	3-668-780-00	CUSHION, IDLER
118	3-668-788-00	ARM, T DETECTION
119	3-668-789-00	HOLDER, BRIDGE, PHOTO
120	3-668-798-00	STOPPER, T TENSION REGULATOR
121	3-668-966-00	SPRING
122	3-668-967-00	STOPPER, BRAKE
123	3-668-970-00	ARM, BRAKE
124	3-668-971-00	ARM, BRAKE RELEASE
125	3-672-602-00	BELT (A), COUNTER
126	3-672-708-00	STOPPER, T TENSION REGULATOR
127	3-701-444-01	WASHER, POLY 6MM DIA., 0.13T
128	3-701-444-11	WASHER, POLY 6MM DIA., 0.25T
129	3-701-444-21	WASHER, POLY 6MM DIA., 0.5T
130	3-701-506-01	SET SCREW, DOUBLE POINT 3x4
131	3-703-074-00	CAP 3, SHAFT

NOTE:

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REEL CHASSIS (3) REEL CHASSIS (3)

Reel Chassis (bottom view)

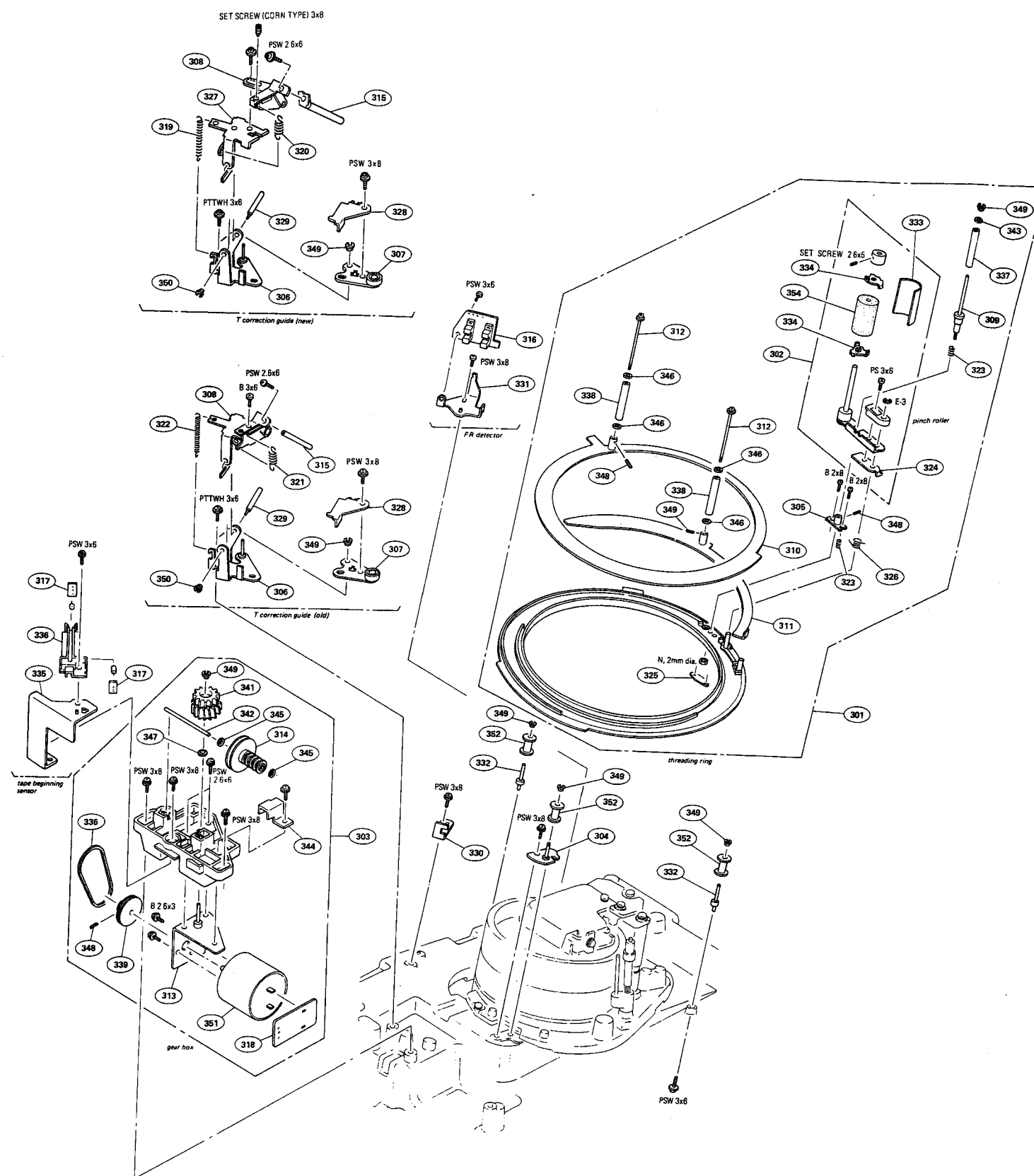


No.	Parts No.	Description
 201	A-6717-250-A	MOUNTED CIRCUIT BOARD, PD-16A
202	A-6740-069-A	PULLEY BLOCK ASS'Y, IDLER
203	X-3668-703-0	LEVER ASS'Y, S
204	X-3668-704-0	LEVER ASS'Y, T
205	1-454-284-00	SOLENOID
206	1-454-285-00	SOLENOID
207	1-603-434-00	PRINTED CIRCUIT BOARD, SW-43
208	3-437-452-00	SPRING, TENSION
209	3-650-512-00	COLLAR, (A)
210	3-651-572-00	SPRING, COMPRESSION
211	3-668-048-11	SPACER (DIA. 4x20)
212	3-668-772-00	SHAFT, IDLER PULLEY
213	3-668-781-00	JOINT, T
214	3-668-782-00	JOINT, S
215	3-668-785-00	BELT (67x2)
216	3-668-786-00	HOLDER, LED
217	3-668-826-00	RETAINER, PIN, SOLENOID
218	3-668-828-00	BRACKET, PS
219	3-703-074-00	CAP 3, SHAFT

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THREADING THREADING

Tape Threading Block



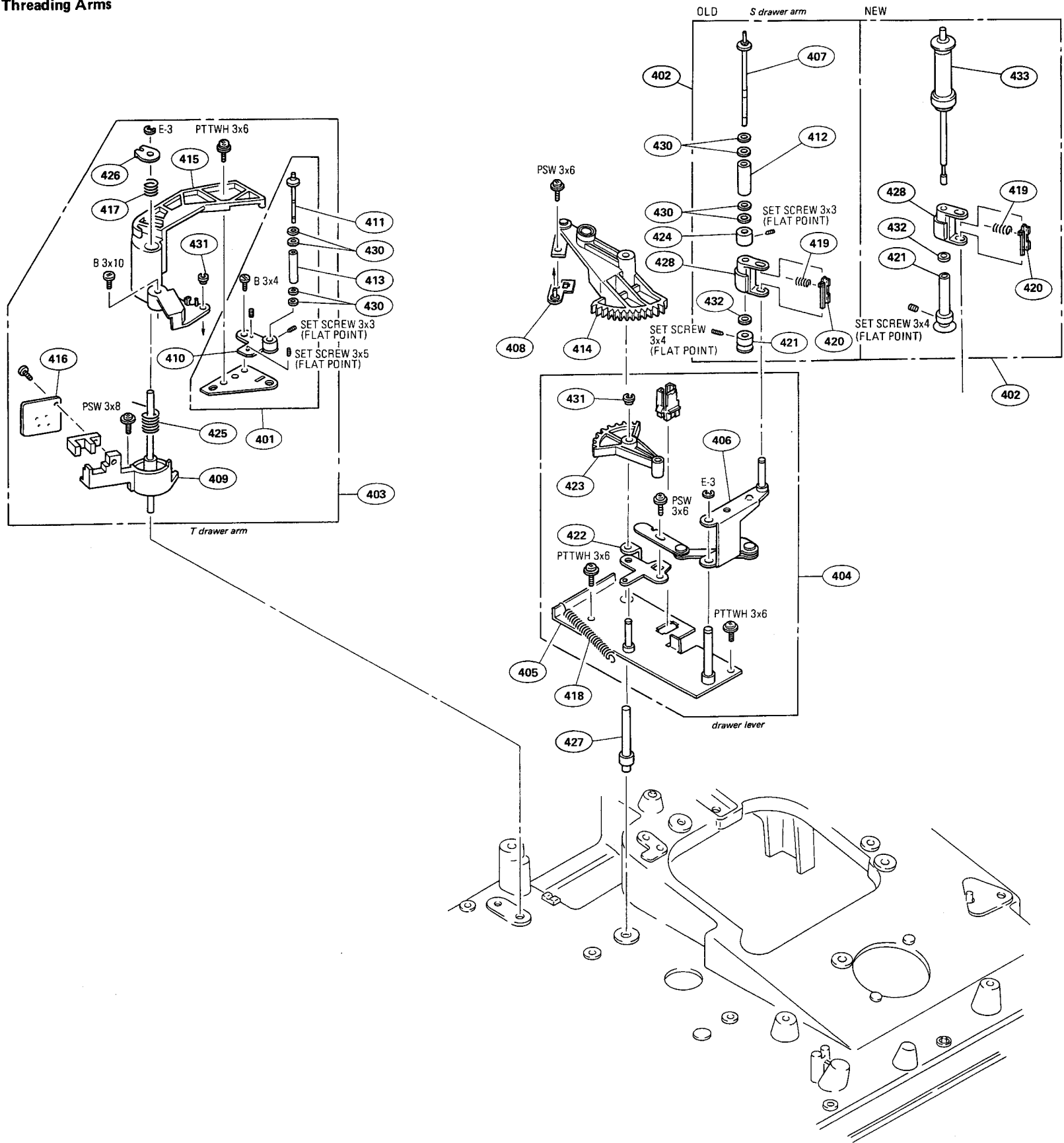
No.	Parts No.	Description	No.	Parts No.	Description
301	A-6750-124-D	RING BLOCK ASS'Y, MAIN	321	3-642-558-00	ARM (C), PINCH ROLLER
302	A-6750-125-D	PINCH ROLLER BLOCK ASS'Y	322	3-668-743-00	NUT, PLATE, ROLLER, PRECEDING
303	A-6750-134-B	BOX BLOCK ASS'Y, GEAR	323	3-668-745-00	SPRING
304	X-3668-719-0	ROLLER ASS'Y, RING	324	3-668-753-00	PLATE, ADJUSTMENT, FR LOCKER
305	X-3668-720-0	BASE ASS'Y, ROLLER, PRECEDING	325	3-668-754-00	SHAFT, GUIDE ARM, T CORRECTION
306	X-3668-721-0	CHASSIS ASS'Y, GUIDE	326	3-668-755-00	PLATE, STOPPER, SR
307	X-3668-722-0	LOCKER ASS'Y, FR	327	3-668-756-02	BRACKET, DETECTION, FR
308	X-3668-723-0	ARM ASS'Y, GUIDE, T CORRECTION	328	3-668-757-00	SHAFT (A), RING ROLLER
		AEP: UP TO S/N 14440	329	3-668-888-00	COVER, PINCH
		UK: UP TO S/N 11710	330	3-668-889-00	CAP, PINCH ROLLER
		U/C: UP TO S/N 10300			
	X-3668-723-2	ARM ASS'Y, GUIDE, T CORRECTION	331	3-668-900-00	BRACKET, T SENSOR
		AEP: S/N 14441 AND LATER	332	3-668-901-00	HOLDER, T PHOTO
		UK: S/N 11711 AND LATER	333	3-668-917-00	ROLLER, PRECEDING
		U/C: S/N 10301 AND LATER	334	3-668-919-00	ROLLER, SR GUIDE
309	X-3668-724-3	SHAFT ASS'Y, ROLLER, PRECEDING	335	3-668-945-00	PULLEY, LM
310	X-3668-731-0	RING (UPPER) ASS'Y, SUB			
311	X-3668-732-0	RING (LOWER) ASS'Y, SUB	336	3-668-946-00	BELT (38.5X1.8), SQUARE
312	X-3668-733-0	SHAFT ASS'Y, SR GUIDE	337	3-668-947-00	PINION, L
313	X-3668-742-0	BRACKET ASS'Y, MOTOR	338	3-668-948-00	SHAFT, WORM
314	X-3668-743-0	PULLEY ASS'Y, WORM	339	3-668-963-00	ROLLER, RING
315	X-3668-756-0	SHAFT ASS'Y, T CORRECTION GUIDE	340	3-669-926-01	WASHER (3), THRUST
		AEP: UP TO S/N 14440			
		UK: UP TO S/N 11710	341	3-669-960-00	RETAINER, SHAFT
		U/C: UP TO S/N 10300	342	3-701-437-21	WASHER, POLY 2MM DIA., 0.5T
	X-3668-756-3	SHAFT ASS'Y, T CORRECTION GUIDE	344	3-701-438-11	WASHER, POLY 2.5MM DIA., 0.25T
		AEP: S/N 14441 AND LATER	345	3-701-439-21	WASHER, POLY 3MM DIA., 0.5T
		UK: S/N 11711 AND LATER			
		U/C: S/N 10301 AND LATER	346	3-701-505-00	SET SCREW, DOUBLE POINT 3X3
316	1-603-585-00	PRINTED CIRCUIT BOARD, FR-11	347	3-701-788-XX	SPRING, TENSION (35T)
317	1-603-737-00	PRINTED CIRCUIT BOARD, PH-5			AEP: UP TO S/N 14440
318	1-606-377-00	PRINTED CIRCUIT BOARD, LM-9			UK: UP TO S/N 11710
319	3-472-327-00	SPRING, TENSION			U/C: UP TO S/N 10300
		AEP: UP TO S/N 14440	348	3-703-074-00	CAP 3, SHAFT
		UK: UP TO S/N 11710	349	3-703-075-00	CAP 2, SHAFT
		U/C: UP TO S/N 10300	350	8-835-056-01	MOTOR, DC (DNR-1002A)
320	3-634-196-00	SPRING			
			351	3-143-067-00	SPRING, TENSION
					AEP: S/N 14441 AND LATER
					UK: S/N 11711 AND LATER
					U/C: S/N 10301 AND LATER
			352	3-437-289-00	SPRING, TENSION
					AEP: S/N 14441 AND LATER
					UK: S/N 11711 AND LATER
					U/C: S/N 10301 AND LATER
			353	3-668-749-02	ARM (A), GUIDE, T CORRECTION
					AEP: S/N 14441 AND LATER
					UK: S/N 11711 AND LATER
					U/C: S/N 10301 AND LATER
			354	X-3668-758-3	PINCH ROLLER ASS'Y

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THREADING ARM THREADING ARM

Supply and Take-up Threading Arms



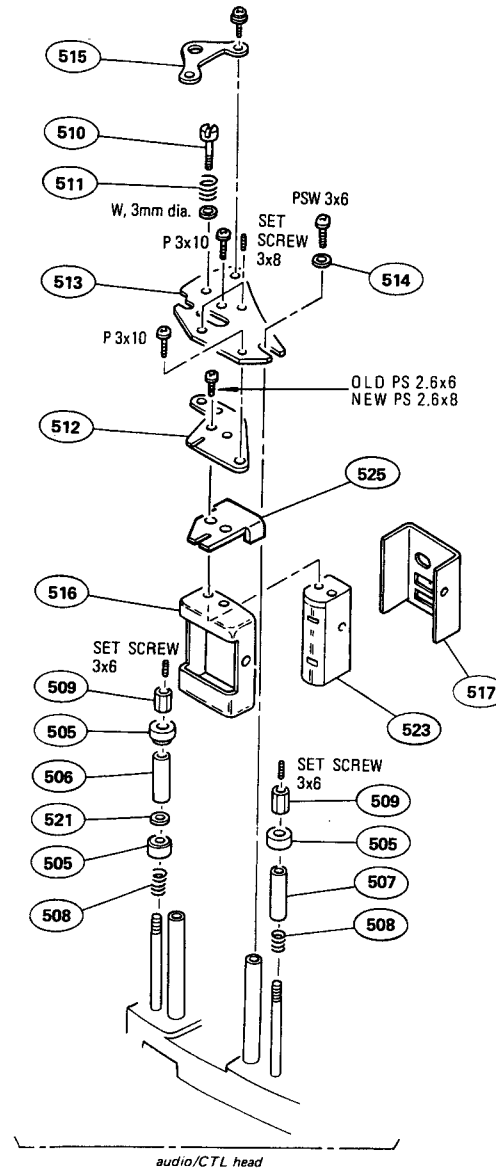
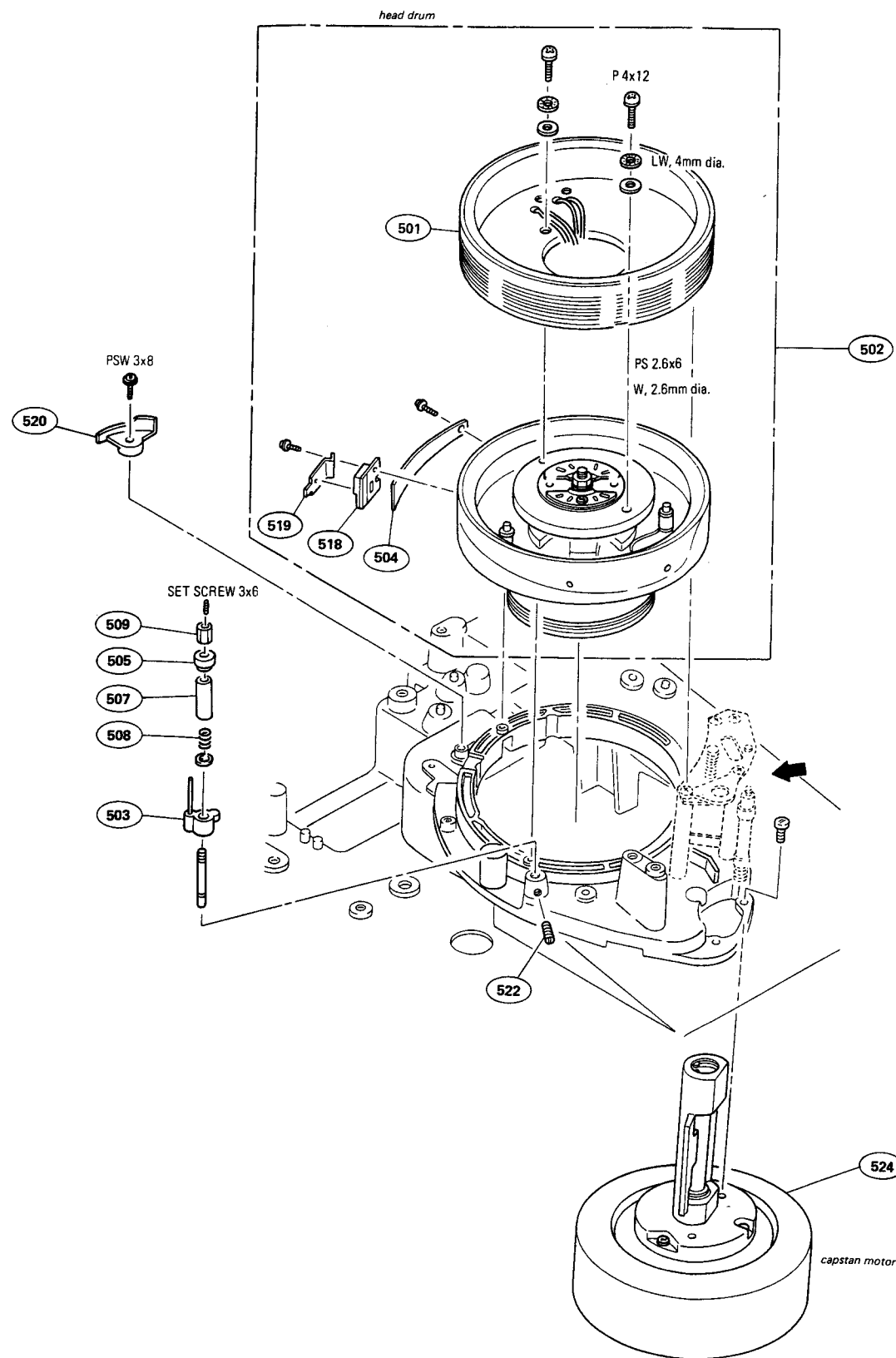
No.	Parts No.	Description
401	A-6746-020-A	ROLLER BLOCK ASS'Y, T GUIDE
402	A-6746-021-B	ROLLER BLOCK ASS'Y, S DRAWER
403	A-6750-121-A	ARM BLOCK ASS'Y, T DRAWER
404	A-6750-122-A	ARM BLOCK ASS'Y, S DRAWER
405	X-3668-710-0	BASE ASS'Y, ARM, S DRAWER
406	X-3668-711-0	ARM ASS'Y, S DRAWER
407	X-3668-712-0	SHAFT (2) ASS'Y, ROLLER (S/N UP TO NOTE 4)
408	X-3668-713-0	LINK (B) ASS'Y, DRIVING
409	X-3668-714-0	RETAINER ASS'Y, ARM, T DRAWER
410	X-3668-715-0	PLATE ASS'Y, GUIDE, T
411	X-3668-716-0	SHAFT (3) ASS'Y, ROLLER
412	X-3668-718-0	GUIDE ASS'Y, TAPE (S/N UP TO NOTE 4)
413	X-3668-727-0	GUIDE ASS'Y, TAPE
414	X-3668-729-0	LEVER ASS'Y, DRAWER
415	X-3668-741-0	ARM ASS'Y, T DRAWER
416	1-603-435-00	PRINTED CIRCUIT BOARD, SW-50
417	3-534-854-00	SPRING, COMPRESSION
418	3-540-506-00	SPRING, TENSION
419	3-644-718-00	SPRING, COMPRESSION
420	3-668-718-00	RETAINER, SPRING, S DRAWER
421	3-668-719-00	HOLDER (L), S GUIDE (S/N UP TO NOTE 4)
	3-668-719-03	HOLDER (L), S GUIDE (S/N NOTE 5 AND HIGHER)
422	3-668-720-00	LIMITER, S DRAWER
423	3-668-721-00	ARM, S DRIVING
424	3-668-724-00	FLANGE (2), LOWER (S/N UP TO NOTE 4)
425	3-668-734-00	SPRING
426	3-668-735-00	RETAINER, SPRING
427	3-668-760-00	SHAFT, DRAWER LEVER
428	3-668-833-00	HOLDER (M), GUIDE, S
429	3-668-946-00	BELT (38.5 x 1.8), SQUARE
430	3-701-438-01	WASHER, POLY 2.5MM DIA., 0.13T
431	3-703-074-00	CAP 3, SHAFT
432	3-669-946-00	RING, O
433	A-6746-034-A	ROLLER BLOCK ASS'Y (2), S DRAWER (S/N NOTE 5 AND HIGHER)

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- AEP . . . #17290
UK . . . #13360
U/C . . . #10300
- AEP . . . #17291
UK . . . #13361
U/C . . . #10301

DRUM/CAPSTAN

Drum Block and Capstan



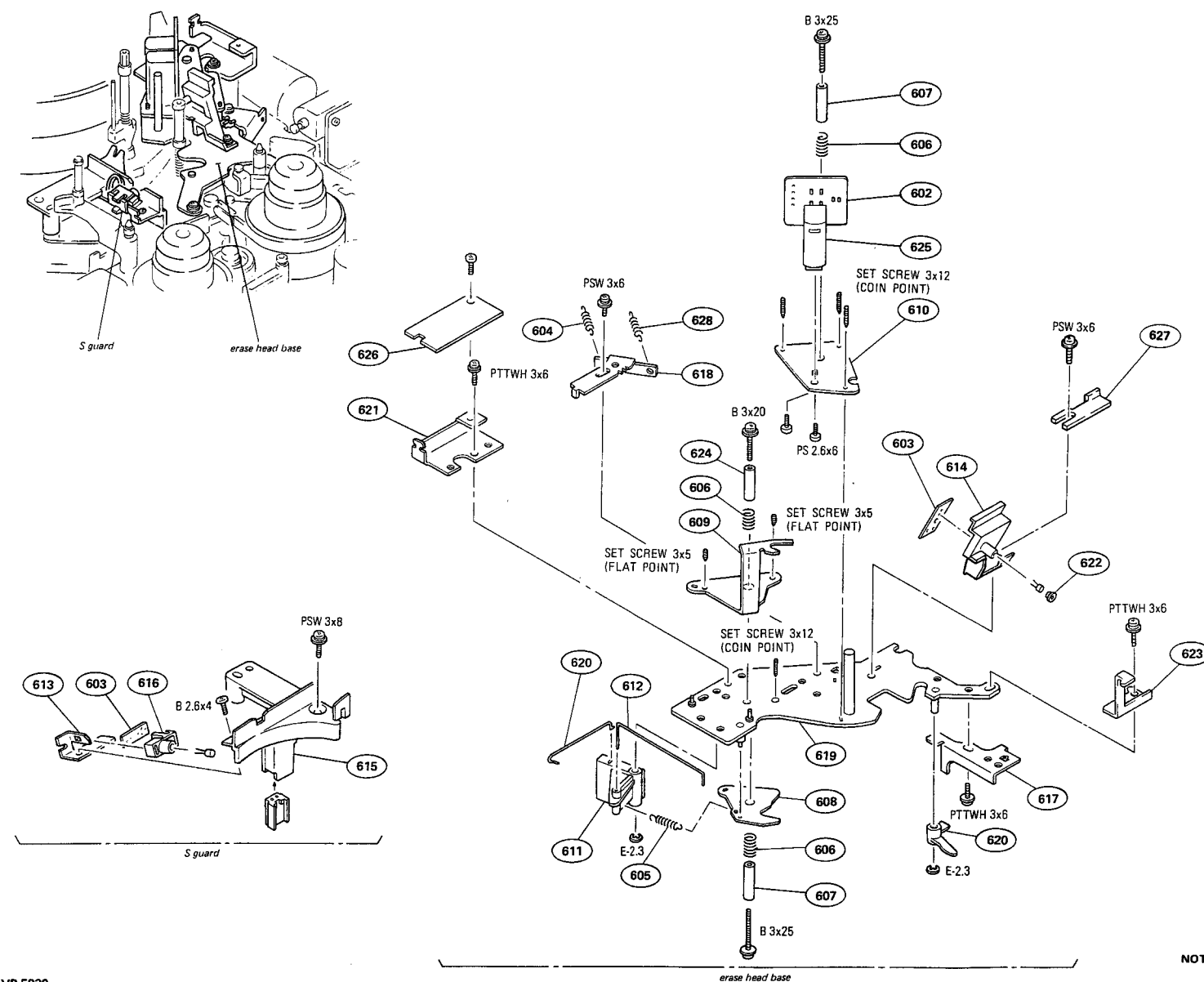
No.	Parts No.	Description
501	A-6709-400-A	DRUM ASS'Y, UPPER, DUR-23-R
502	A-6709-392-A	HEAD DRUM ASS'Y, DUH-23A-R
503	X-3650-226-0	CORRECT GUIDE ASS'Y
504	1-586-633-00	CONDENSATION, SENSOR
505	3-641-612-00	GUIDE, TAPE
506	3-641-613-00	GUIDE, TAPE
507	3-641-614-00	GUIDE, TAPE
508	3-641-615-00	SPRING, COMPRESSION
509	3-641-616-00	NUT, TAPE GUIDE ADJUSTMENT
510	3-641-621-00	SCREW, HEAD ADJUSTMENT
511	3-641-622-00	SPRING, COMPRESSION
512	3-641-640-00	BRACKET, C.T.L. HEAD (1)
513	3-641-641-02	BRACKET, C.T.L. HEAD (2)
514	3-645-076-00	WASHER, M-REEL S
515	3-647-815-00	PLATE, ADJUSTMENT, C.T.L. HEAD
516	3-650-301-02	COVER, HEAD, D-CTL
517	3-650-302-00	COVER, HEAD, (REAR)
518	3-656-501-00	HOLDER, TERMINAL
519	3-656-502-00	PLATE, TERMINAL
520	3-668-999-00	CAM, PROTECTION
521	3-669-952-00	WASHER, TAPE GUIDE
522	3-701-508-00	SET SCREW, DOUBLE POINT 3x6
523	8-829-358-41	HEAD, CTL (PP150-5803B)
524	8-838-019-01	MOTOR, DC (BHF-1600A)
525	3-669-985-00	PLATE, ADJUSTMENT
		(AEP . . . S/N 16791 AND HIGHER)
		(UK . . . S/N 12661 AND HIGHER)
		(U/C . . . S/N 10301 AND HIGHER)

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ERASE HEAD BASE ERASE HEAD BASE

Erase Head Base and S Guard



VP-5030

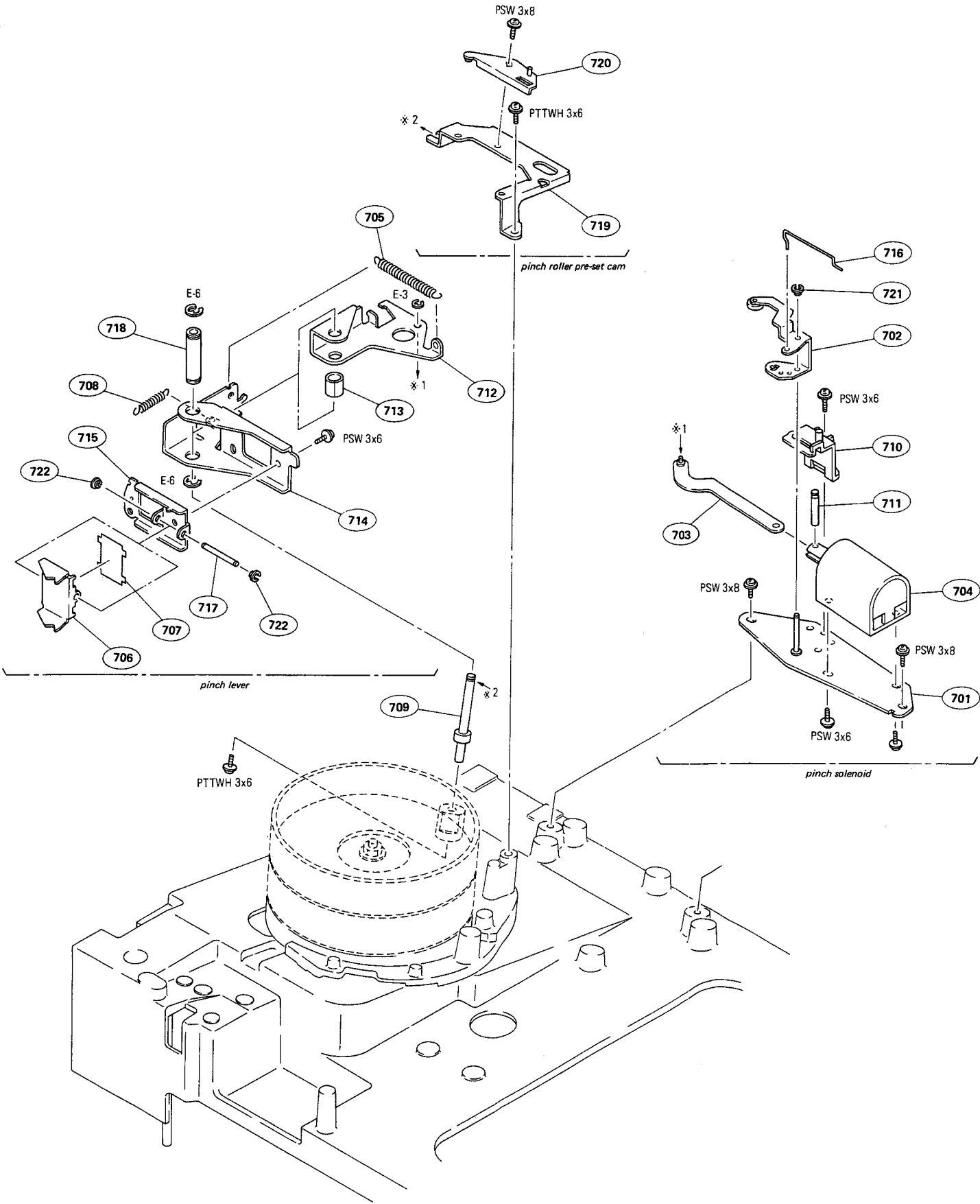
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No.	Parts No.	Description
601	X-3668-728-0	DECK ASS'Y, E HEAD
602	1-603-729-00	PRINTED CIRCUIT BOARD, EC-19
603	1-603-737-00	PRINTED CIRCUIT BOARD, PH-5
604	3-535-558-00	SPRING, TENSION (AEP... S/N UP TO 15140) (UK... S/N UP TO 12210) (U/C... S/N UP TO 10300)
	3-538-102-00	SPRING, TENSION (AEP... S/N 15141 AND HIGHER) (UK... S/N 12211 AND HIGHER) (U/C... S/N 10301 AND HIGHER)
605	3-630-615-XX	SPRING, TENSION (12T)
606	3-637-335-00	SPRING, COMPRESSION (C)
607	3-657-086-00	SPACER (3-20)
608	3-668-705-00	HOLDER (LOWER), S
609	3-668-706-00	HOLDER (UPPER), S
610	3-672-723-00	TABLE, HEAD, E
611	3-668-708-00	ARM, DRIVING, CORRECTION GUIDE
612	3-668-709-00	ROD, PULL, CORRECTION GUIDE
613	3-668-809-00	BRACKET, HOLDER AEP: UP TO S/N 15240 UK: UP TO S/N 11710 U/C: UP TO S/N 10300
	3-668-809-02	BRACKET, HOLDER AEP: S/N 15241 AND LATER UK: S/N 11711 AND LATER U/C: S/N 10301 AND LATER
614	3-668-832-00	HOLDER (S) AEP: UP TO S/N 15240 UK: UP TO S/N 11710 U/C: UP TO S/N 10300
	3-668-832-02	HOLDER (S) AEP: S/N 15241 AND LATER UK: S/N 11711 AND LATER U/C: S/N 10301 AND LATER
615	3-668-836-00	GUARD, S AEP: UP TO S/N 15240 UK: UP TO S/N 11710 U/C: UP TO S/N 10300
	3-668-836-02	GUARD, S AEP: S/N 15241 AND LATER UK: S/N 11711 AND LATER U/C: S/N 10301 AND LATER
616	3-668-837-00	HOLDER, LED
617	3-668-859-00	STOPPER, RING
618	3-668-860-00	HOOK, SPRING, TENSION REGULATOR
619	3-668-884-03	JOINT, RESERVE PRESS
620	3-668-894-00	LEVER, RELEASE
621	3-668-962-00	BRACKET, AH PC BOARD
622	3-669-920-00	COVER, S PHOTO
623	3-669-963-00	SPRING, LEAF, GROUND
624	4-855-006-11	SPACER, PIPE
625	8-825-514-20	HEAD, CTL (PP170-58)
626	1-586-192-00	PRINTED CIRCUIT BOARD, AH-3
627	3-669-964-00	PLATE, GROUND
628	3-534-238-XX	SPRING, TENSION (23T)

PINCH LEVER PINCH LEVER

Pinch Lever and Pinch Solenoid



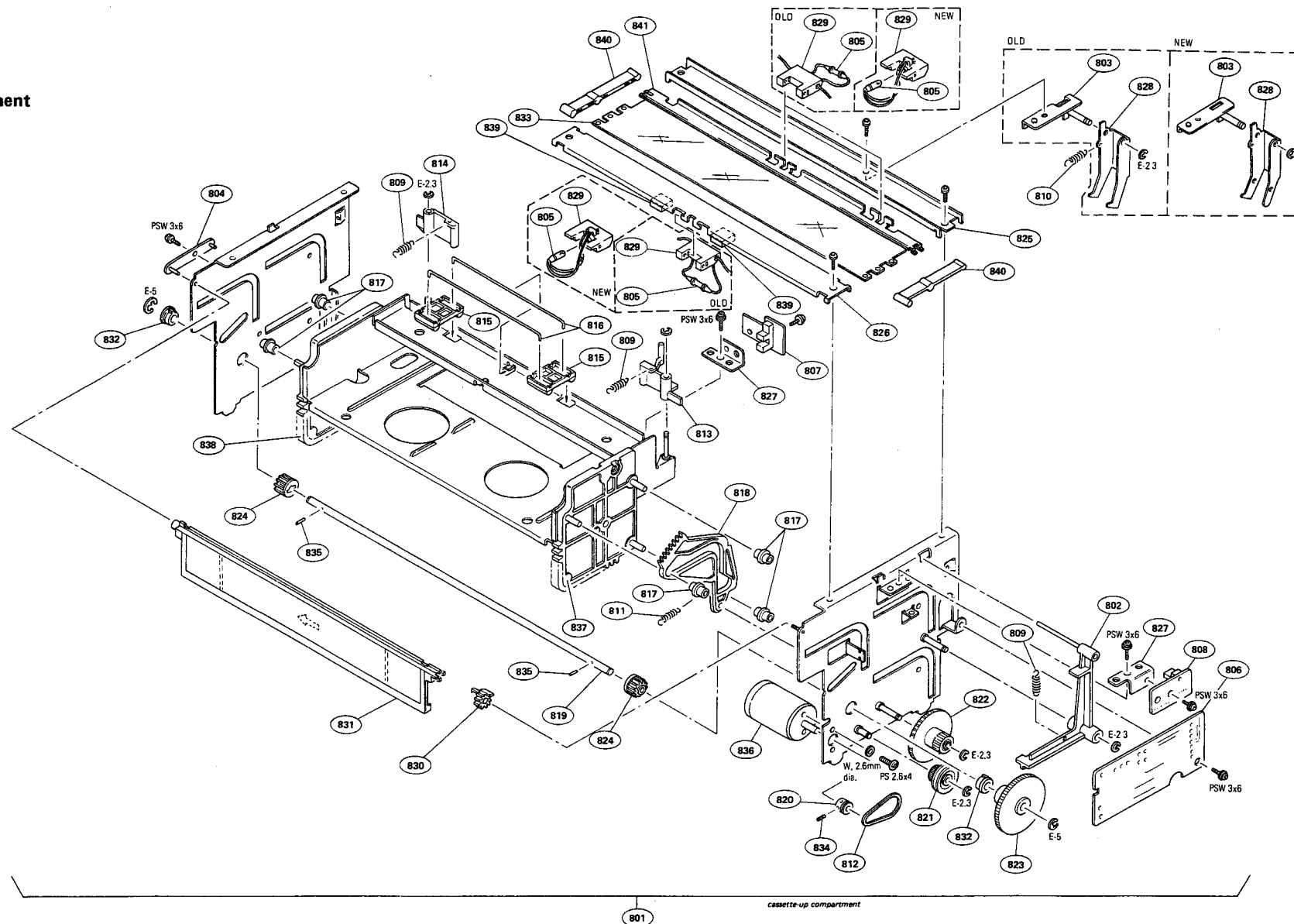
No.	Parts No.	Description
701	X-3668-734-0	BASE ASS'Y, PINCH PRESS
702	X-3668-735-3	LEVER ASS'Y, RESERVE PRESS
703	X-3668-736-0	JOINT ASS'Y
704	1-454-286-00	SOLENOID
705	3-610-265-02	SPRING
706	3-642-518-00	LEVER, PINCH
707	3-642-519-00	SPRING
708	3-645-392-00	SPRING, TENSION
709	3-668-862-00	SHAFT, PRESS LEVER, PINCH
710	3-668-863-00	GUIDE, ARBOR
711	3-668-864-00	PIN, SOLENOID
712	3-668-865-00	LEVER (B), PINCH PRESS
713	3-668-867-00	SPACER (8x9)
714	3-668-868-00	LEVER (A), PINCH PRESS
715	3-668-883-00	PLATE, ADJUSTMENT, PINCH PRESS
716	3-668-884-03	JOINT, RESERVE PRESS
717	3-668-895-00	SHAFT
718	3-668-896-00	SLEEVE, PRESS LEVER, PINCH
719	3-668-997-00	DECK, P SUB PRESS
720	3-668-998-00	CAM, SUB PRESS
721	3-703-074-00	CAP 3, SHAFT
722	3-703-075-00	CAP 2, SHAFT

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CASSETTE-UP COMPARTMENT

CASSETTE-UP COMPARTMENT

Cassette-up Compartment



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No.	Parts No.	Description
801	A-6751-104-C	CASSETTE-UP ASS'Y
802	X-3668-059-0	ARM ASS'Y, SWITCH, DOWN
803	X-3668-060-0	HOLDER ASS'Y, ARM
		AEP: UP TO S/N 13640
		UK: UP TO S/N 11710
		U/C: UP TO S/N 10300
	X-3668-060-3	HOLDER ASS'Y, ARM
		AEP: S/N 13641 AND LATER
		UK: S/N 11711 AND LATER
		U/C: S/N 10301 AND LATER
804	X-3668-061-0	SUPPORT ASS'Y, LID
805	1-518-455-00	LAMP, PILOT
		AEP: UP TO S/N 13640
		UK: UP TO S/N 11710
		U/C: UP TO S/N 10300
	1-518-508-00	LAMP, PILOT
		AEP: S/N 13641 AND LATER
		UK: S/N 11711 AND LATER
		U/C: S/N 10301 AND LATER

No.	Parts No.	Description
806	1-604-429-00	PRINTED CIRCUIT BOARD, CC-9
807	1-604-430-00	PRINTED CIRCUIT BOARD, CC-10
808	1-604-431-00	PRINTED CIRCUIT BOARD, CC-11
809	3-507-051-00	SPRING, TENSION
810	3-534-217-00	SPRING, TENSION
811	3-536-780-00	SPRING, TENSION
812	3-653-387-00	BELT, LM
813	3-668-295-00	LEVER (RIGHT), CASSETTE
		PUSH-OUT
814	3-668-296-00	LEVER (LEFT), CASSETTE
		PUSH-OUT
815	3-668-297-00	RETAINER, CASSETTE
816	3-668-298-00	SPRING
817	3-668-299-00	ROLLER, GUIDE
818	3-668-300-00	CAM, LID OPEN
819	3-668-301-00	SHAFT, DRIVING
820	3-668-302-00	PULLEY, MOTOR

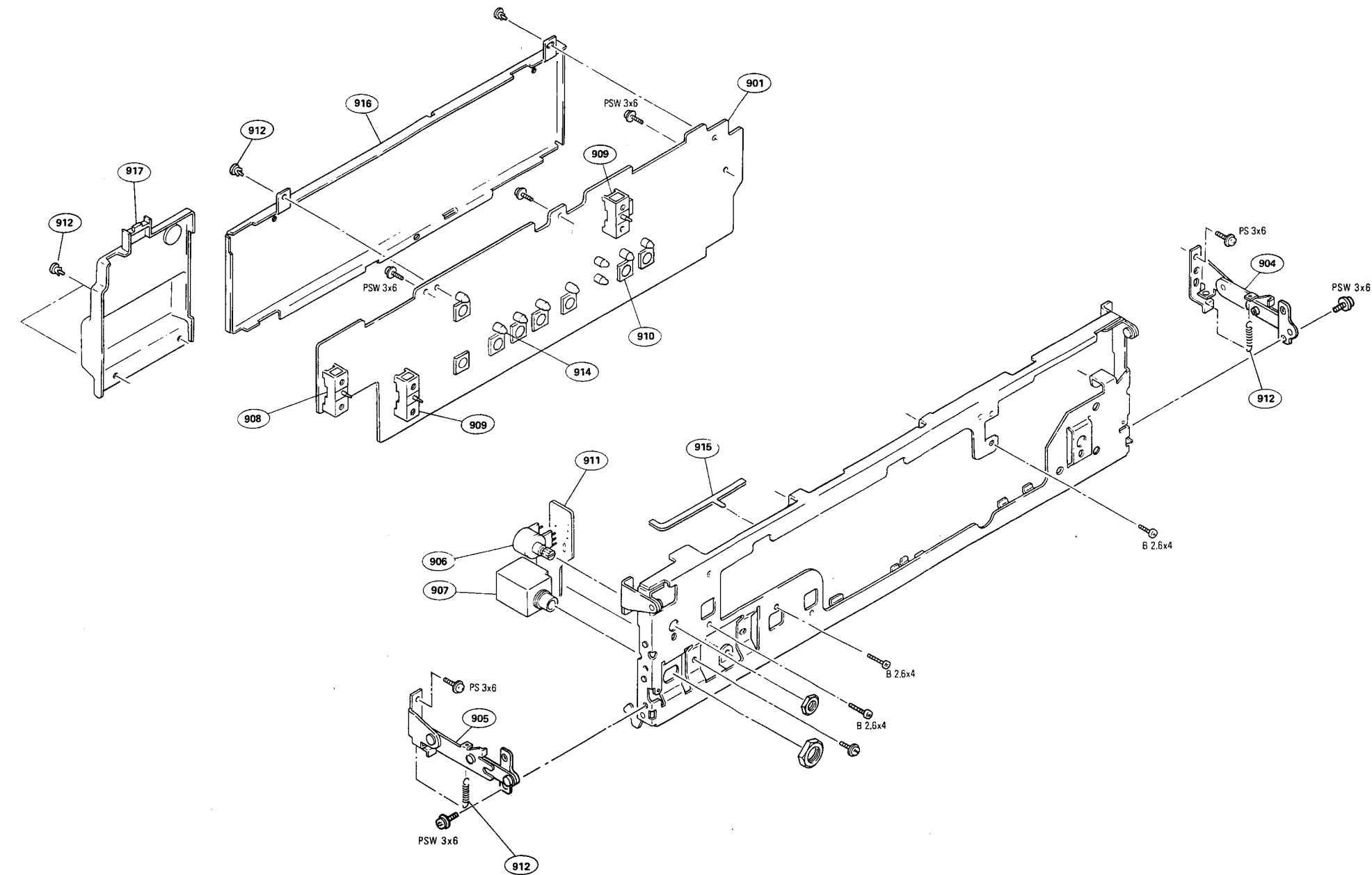
No.	Parts No.	Description
821	3-668-303-00	GEAR (A)
822	3-668-304-00	GEAR (B)
823	3-668-305-00	GEAR (C)
824	3-668-306-00	GEAR (D)
825	3-668-307-00	JOINT (R), LEFT & RIGHT
		AEP: UP TO S/N 13640
		UK: UP TO S/N 11710
		U/C: UP TO S/N 10300
	3-668-307-02	JOINT (R), LEFT & RIGHT
		AEP: S/N 13641 AND LATER
		UK: S/N 11711 AND LATER
		U/C: S/N 10301 AND LATER
826	3-668-308-00	JOINT (F), LEFT & RIGHT
		AEP: UP TO S/N 13640
		UK: UP TO S/N 11710
		U/C: UP TO S/N 10300
	3-668-308-03	JOINT (F), LEFT & RIGHT
		AEP: S/N 13641 AND LATER
		UK: S/N 11711 AND LATER
		U/C: S/N 10301 AND LATER

No.	Parts No.	Description
827	3-668-309-00	BRACKET, SWITCH
828	3-668-310-00	ARM, LID OPEN
		AEP: UP TO S/N 13640
		UK: UP TO S/N 11710
		U/C: UP TO S/N 10300
	3-668-310-02	ARM, LID OPEN
		AEP: S/N 13641 AND LATER
		UK: S/N 11711 AND LATER
		U/C: S/N 10301 AND LATER
829	3-668-314-00	HOLDER, LAMP
		AEP: UP TO S/N 13640
		UK: UP TO S/N 11710
		U/C: UP TO S/N 10300
	3-668-314-02	HOLDER, LAMP
		AEP: S/N 13641 AND LATER
		UK: S/N 11711 AND LATER
		U/C: S/N 10301 AND LATER
830	3-668-315-02	GEAR, LID
831	3-668-371-00	LID, CASSETTE
832	3-668-474-00	BEARING (6)
833	3-672-604-11	REFLECTOR
834	3-701-506-01	SET SCREW, DOUBLE POINT 3 x 4
835	3-703-358-00	PIN, PARALLEL (DIA. 2 x 8)
836	8-835-055-01	MOTOR, DC (DNR-4700A)
837	X-3668-057-0	RACK ASS'Y CASECON (RIGHT)
838	X-3668-058-0	RACK ASS'Y CASECON (LEFT)
839	3-672-926-00	CUSHION LID
		(AEP: S/N 12641 AND HIGHER)
		(UK: S/N 10311 AND HIGHER)
		(U/C: S/N 10301 AND HIGHER)
840	3-668-313-02	FRAME, SUPPORT, REFLECTOR
841	3-672-639-03	BRACKET, LAMP

FUNCTION CONTROL

FUNCTION CONTROL

Function Control

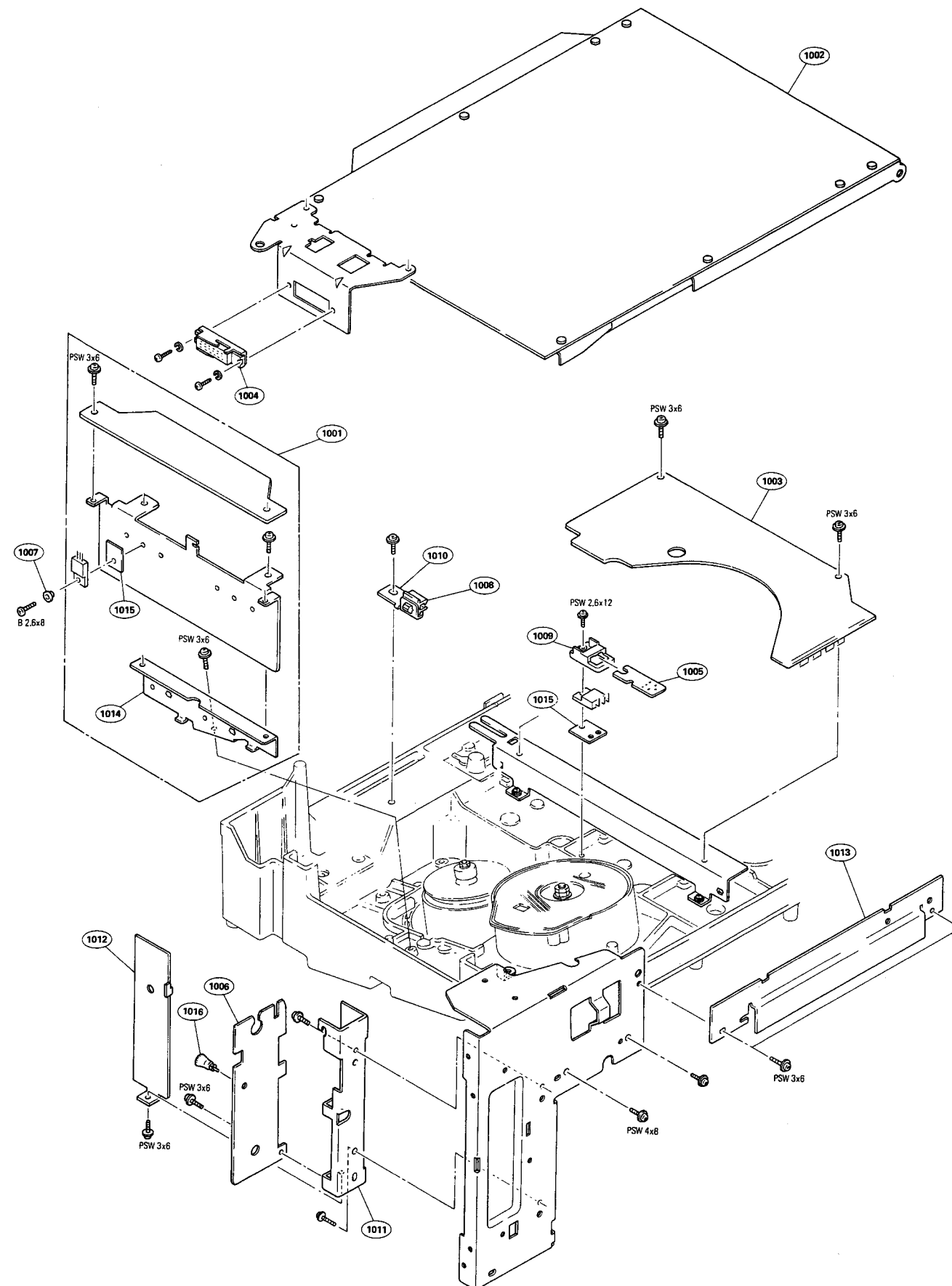


No.	Parts No.	Description
901	A-6728-404-A	MOUNTED CIRCUIT BOARD, KY-21C
904	X-3668-766-0	STAY (RIGHT) ASS'Y, LOCK
905	X-3668-765-0	STAY (LEFT) ASS'Y, LOCK
906	1-228-218-00	RES, VAR, CARBON 500/500
907	1-507-553-00	JACK
908	1-516-963-00	SWITCH, LEVER SLIDE
909	1-516-995-00	SWITCH, LEVER SLIDE
910	1-552-539-00	SWITCH, KEY BOARD
911	1-606-366-00	PRINTED CIRCUIT BOARD, HP-6
912	3-437-288-00	SPRING, TENSION
913	3-531-576-11	RIVET
915	3-669-905-00	HOLDER, LAMP
916	3-672-603-00	PROTECTOR (A), HARNESS
917	3-672-608-00	PLATE, BOTTOM, KEY BOARD
918	3-672-609-00	COVER, MICROPHONE JACK
919	3-672-702-00	SPACER, KEY

- NOTE:
- The shaded and  -marked components are critical to safety. Replace only with same components as specified.
 - Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
 - Item with no part number and/or no description are not stocked because they are seldom required for routine service.

CHASSIS (1) CHASSIS (1)

Chassis (bottom view)



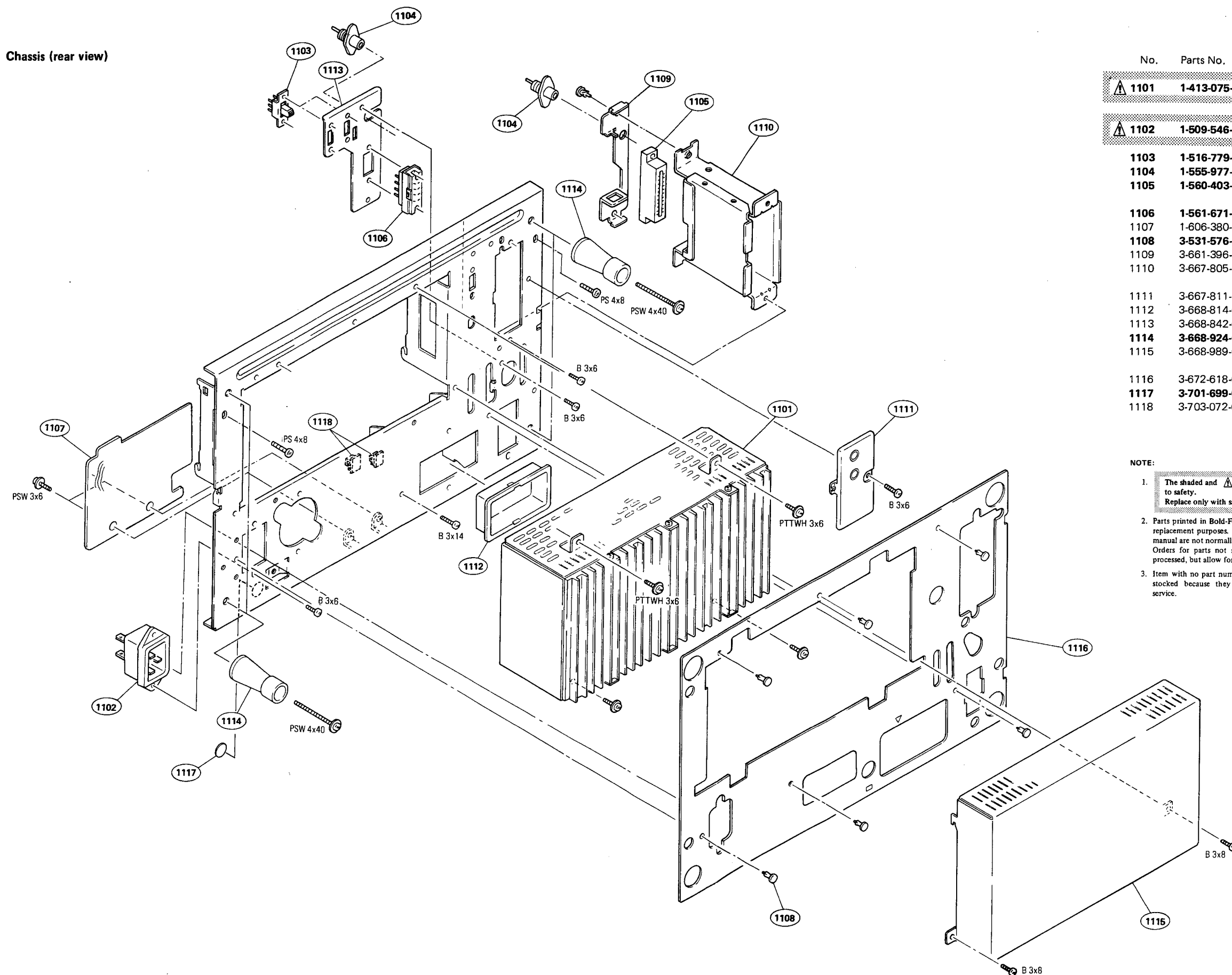
No.	Parts No.	Description
1001	A-6715-143-A	MOUNTED CIRCUIT BOARD, DR-17B
1002	A-6717-248-D	MOUNTED CIRCUIT BOARD, SY-75A
1003	A-6725-359-A	MOUNTED CIRCUIT BOARD, MR-11B
1004	1-561-583-00	RECEPTACLE (FEMALE) 33P
1005	1-605-018-00	PRINTED CIRCUIT BOARD, PT-9
1006	1-606-378-00	PRINTED CIRCUIT BOARD, DC-13B
1007	2-832-007-00	BUSHING (K), INSULATING
1008	3-642-310-00	HOLDER, CIRCUIT BOARD
1009	3-669-904-00	HOLDER, PT
1010	3-669-927-00	SUPPORT, MR
1011	3-672-611-00	BRACKET, DC
1012	3-672-616-00	PROTECTOR, HARNESS, DC
1013	3-672-620-02	BRACKET, MR
1014	3-672-643-00	SUPPORT, DR
1015	3-703-207-11	INSULATOR, TO-220
1016	3-703-356-00	RIVET, T TYPE

NOTE:

- The shaded and **Δ**-marked components are critical to safety. Replace only with same components as specified.
- Parts printed in **Bold-Face** type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face** type will be processed, but allow for additional delivery time.
- Item with no part number and/or no description are not stocked because they are seldom required for routine service.

CHASSIS (2) CHASSIS (2)

Chassis (rear view)



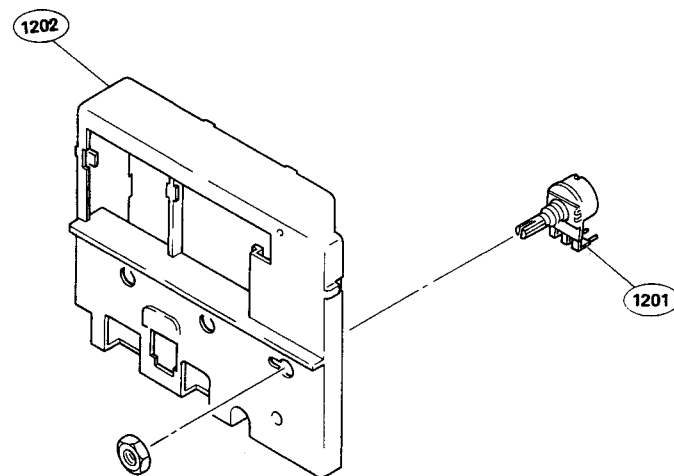
No.	Parts No.	Description
1101	1-413-075-00	SWITCHING REGULATOR (UR-02)
1102	1-509-546-00	3P INLET
1103	1-516-779-XX	SLIDE SWITCH
1104	1-555-977-00	CONNECTOR ASS'Y, DIN
1105	1-560-403-00	CONNECTOR, PC BOARD
1106	1-561-671-00	SOCKET, MULTI CONNECTOR 8P
1107	1-606-380-00	PRINTED CIRCUIT BOARD, AC-35
1108	3-531-576-11	RIVET
1109	3-661-396-00	PLATE, CONNECTOR, RF
1110	3-667-805-00	CASE, MD
1111	3-667-811-00	LID, MD
1112	3-668-814-00	ESCUTCHEON, CONNECTOR
1113	3-668-842-00	PLATE, CONNECTOR, SUB
1114	3-668-924-00	FOOT, REAR
1115	3-668-989-00	COVER, SWITCH REGULATOR
1116	3-672-618-00	PLATE (T), ORNAMENTAL, REAR PANEL
1117	3-701-699-00	LABEL, GROUND TERMINAL
1118	3-703-072-00	HOLDER, PCB

NOTE:

- The shaded and **Δ**-marked components are critical to safety. Replace only with same components as specified.
- Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.
- Item with no part number and/or no description are not stocked because they are seldom required for routine service.

METER PANEL CHASSIS (3)

Meter Panel

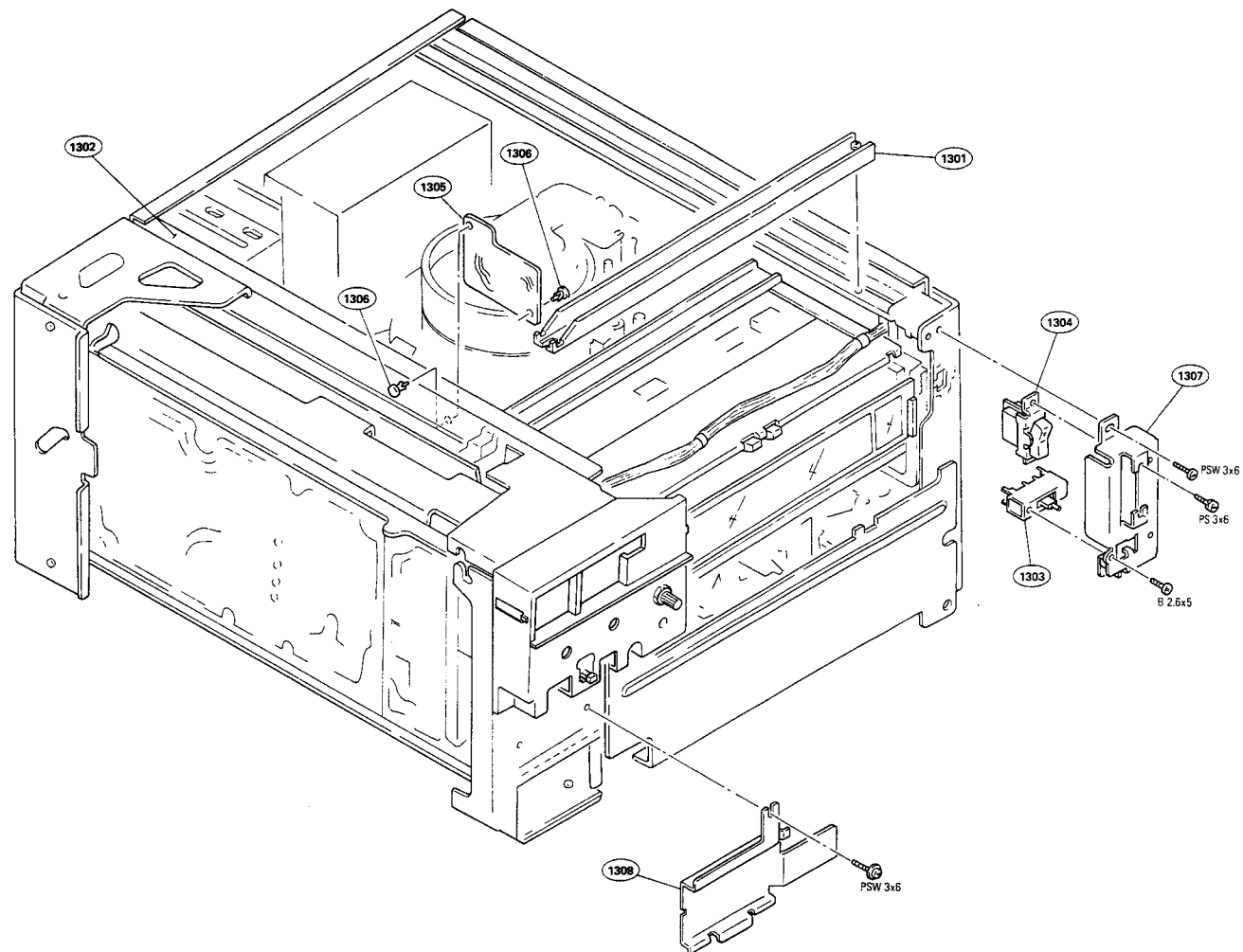


No.	Parts No.	Description
1201	1-224-540-00	RES, VAR, CARBON 100K
1202	3-667-810-00	PANEL (PLAYER), METER
		AEP: UP TO S/N 11840
		UK: UP TO S/N 11910
		U/C: UP TO S/N 10000
	3-667-810-03	PANEL (PLAYER), METER
		AEP: S/N 11841 AND LATER
		UK: S/N 11911 AND LATER
		U/C: S/N 10001 AND LATER

NOTE:

- The shaded and -marked components are critical to safety. Replace only with same components as specified.
- Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.
- Item with no part number and/or no description are not stocked because they are seldom required for routine service.

Chassis (top view)



No.	Parts No.	Description
1301	A-6730-498-A	BRACKET ASS'Y
1302	X-3672-606-0	BEAM ASS'Y, LEFT
1303	1-552-271-00	SWITCH, SLIDE
1304	1-553-159-00	SWITCH, ROCKER
1305	1-606-379-00	PRINTED CIRCUIT BOARD, CN-42
1306	3-531-576-11	RIVET
1307	3-668-811-00	BRACKET, SWITCH, POWER
1308	3-672-610-00	PLATE, SHIELD

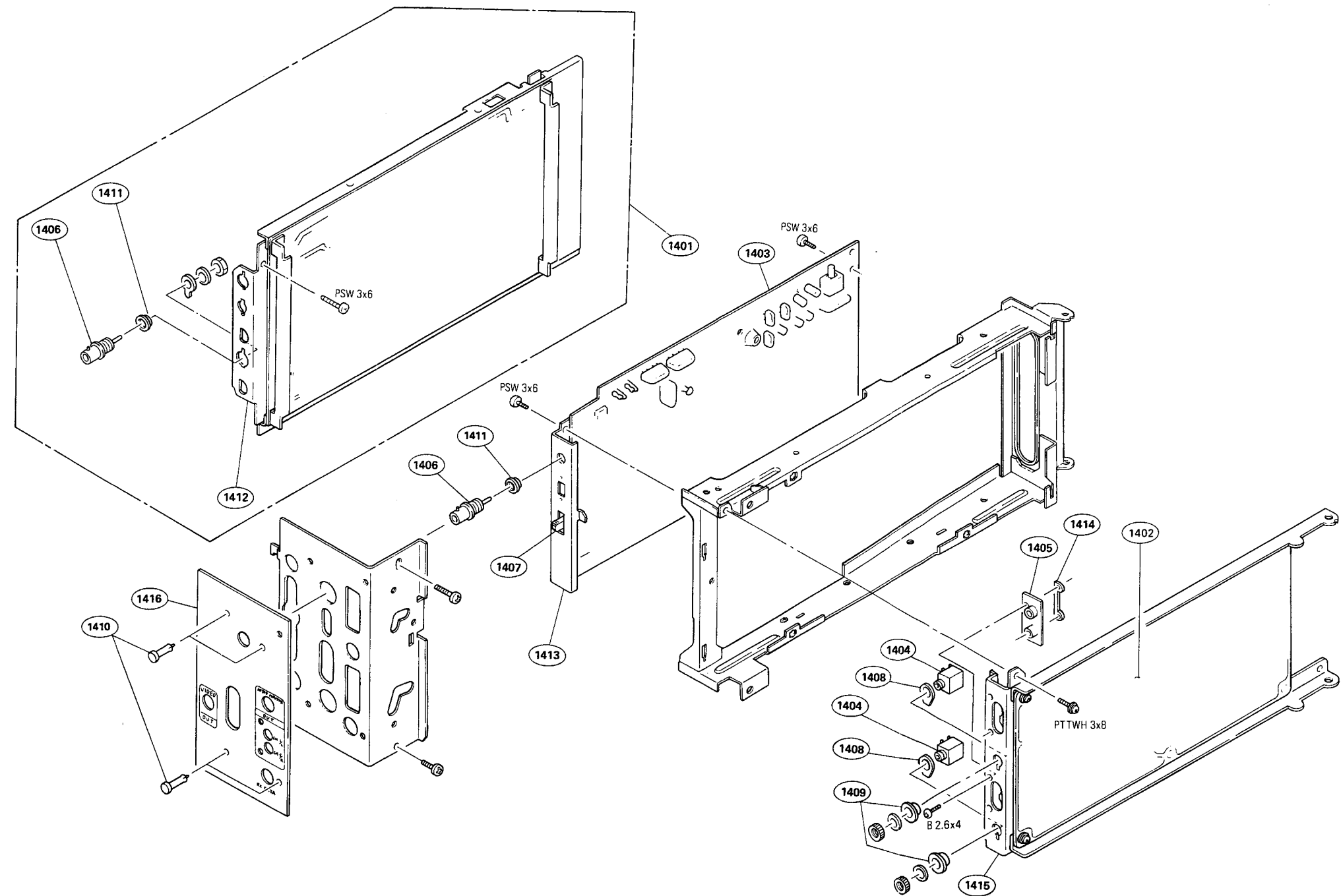
NOTE:

- The shaded and -marked components are critical to safety. Replace only with same components as specified.
- Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.
- Item with no part number and/or no description are not stocked because they are seldom required for routine service.

PRINTED CIRCUIT BOARD

PRINTED CIRCUIT BOARD

Printed Circuit Boards

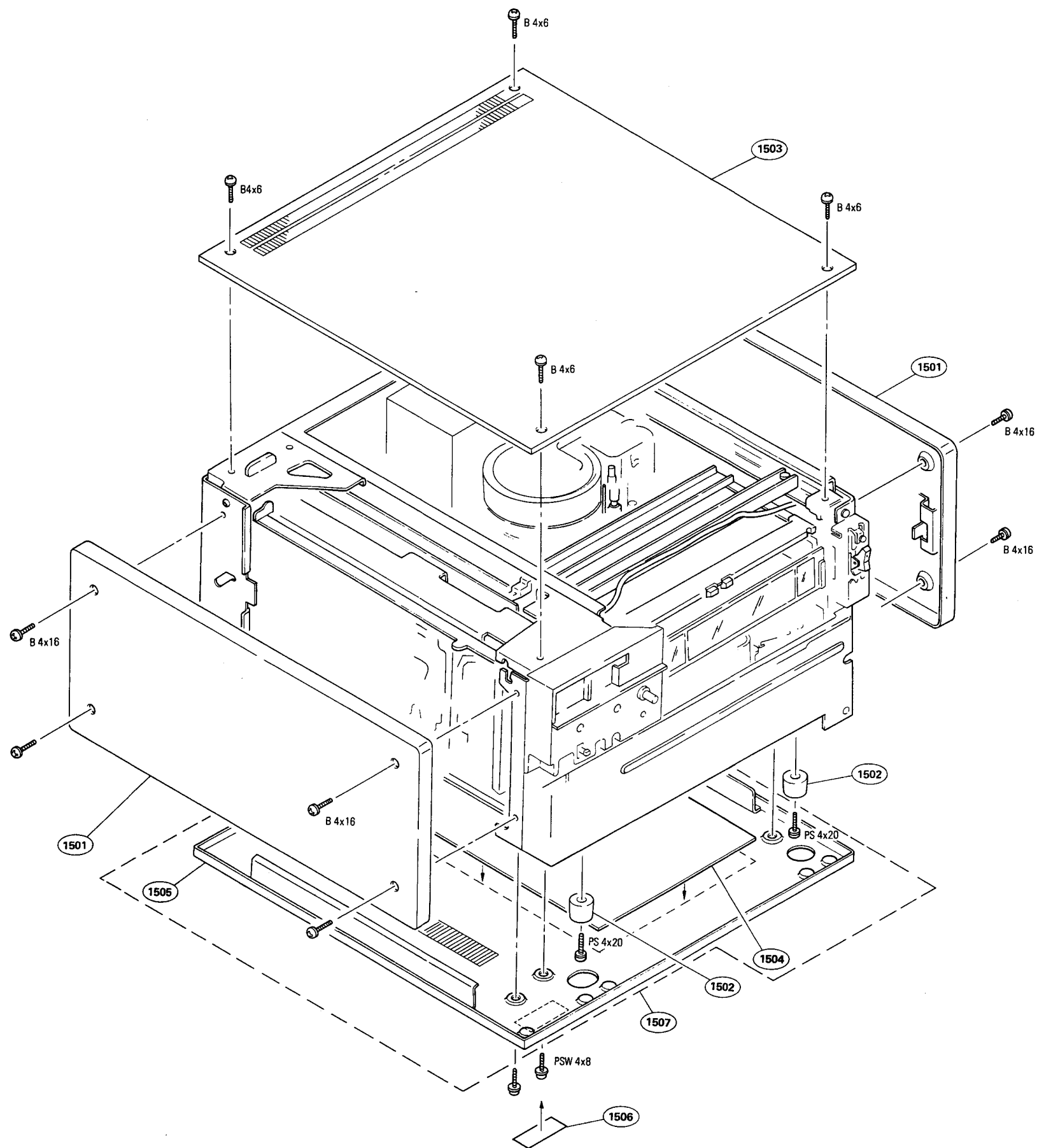


No.	Parts No.	Description
1401	A-6711-338-A	MOUNTED CIRCUIT BOARD, VP-13
1402	A-6713-121-A	MOUNTED CIRCUIT BOARD, AP-7
1403	A-6715-144-A	MOUNTED CIRCUIT BOARD, SV-44C
1404	1-507-251-XX	JACK
1405	1-507-732-00	JACK, PIN 2P
1406	1-509-891-00	RECEPTACLE, BNC (S/N UP TO NOTE 4)
	1-562-261-11	RECEPTACLE, BNC (S/N NOTE 5 AND HIGHER)
1407	1-516-781-XX	SLIDE SWITCH
1408	3-437-228-00	INSULATOR, JACK
1409	3-437-229-01	INSULATOR (B), JACK
1410	3-531-576-11	RIVET
1411	3-654-545-00	SPACER, BNC (S/N UP TO NOTE 4)
	3-669-984-00	WASHER DIA 9.6 (S/N NOTE 5 AND HIGHER)
1412	3-667-803-00	PANEL, VO CONNECTOR (S/N UP TO NOTE 4)
	3-667-803-03	PANEL, VO CONNECTOR (S/N NOTE 5 AND HIGHER)
1413	3-667-804-00	PANEL, SV CONNECTOR (S/N UP TO NOTE 4)
	3-667-804-02	PANEL, SV CONNECTOR (S/N NOTE 5 AND HIGHER)
1414	3-668-841-00	BRACKET, 2P PIN JACK
1415	3-668-848-00	PANEL, AU CONNECTOR
1416	3-672-707-00	PLATE (VP) (T), ORNAMENTAL

- NOTE:
- The shaded and **▲**-marked components are critical to safety. Replace only with same components as specified.
 - Parts printed in **Bold-Face** type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face** type will be processed, but allow for additional delivery time.
 - Item with no part number and/or no description are not stocked because they are seldom required for routine service.
 - AEP . . . #16290
UK . . . #12660
U/C . . . #10300
 - AEP . . . #16291
UK . . . #12661
U/C . . . #10301

ORNAMENTAL PANEL (1) ORNAMENTAL PANEL (1)

Ornamental Panel



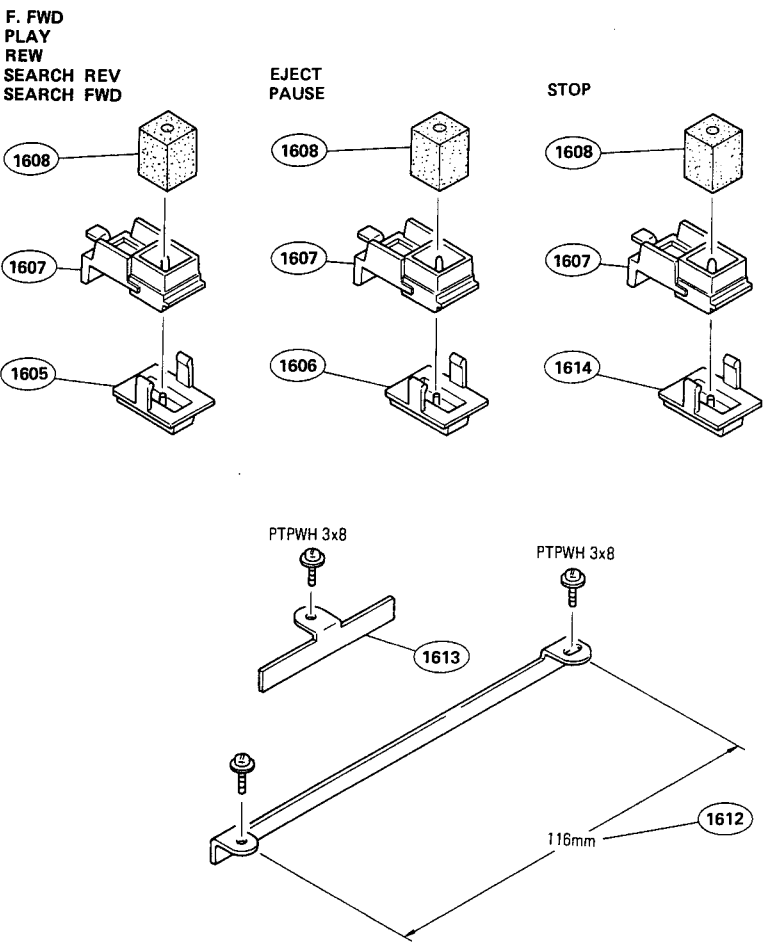
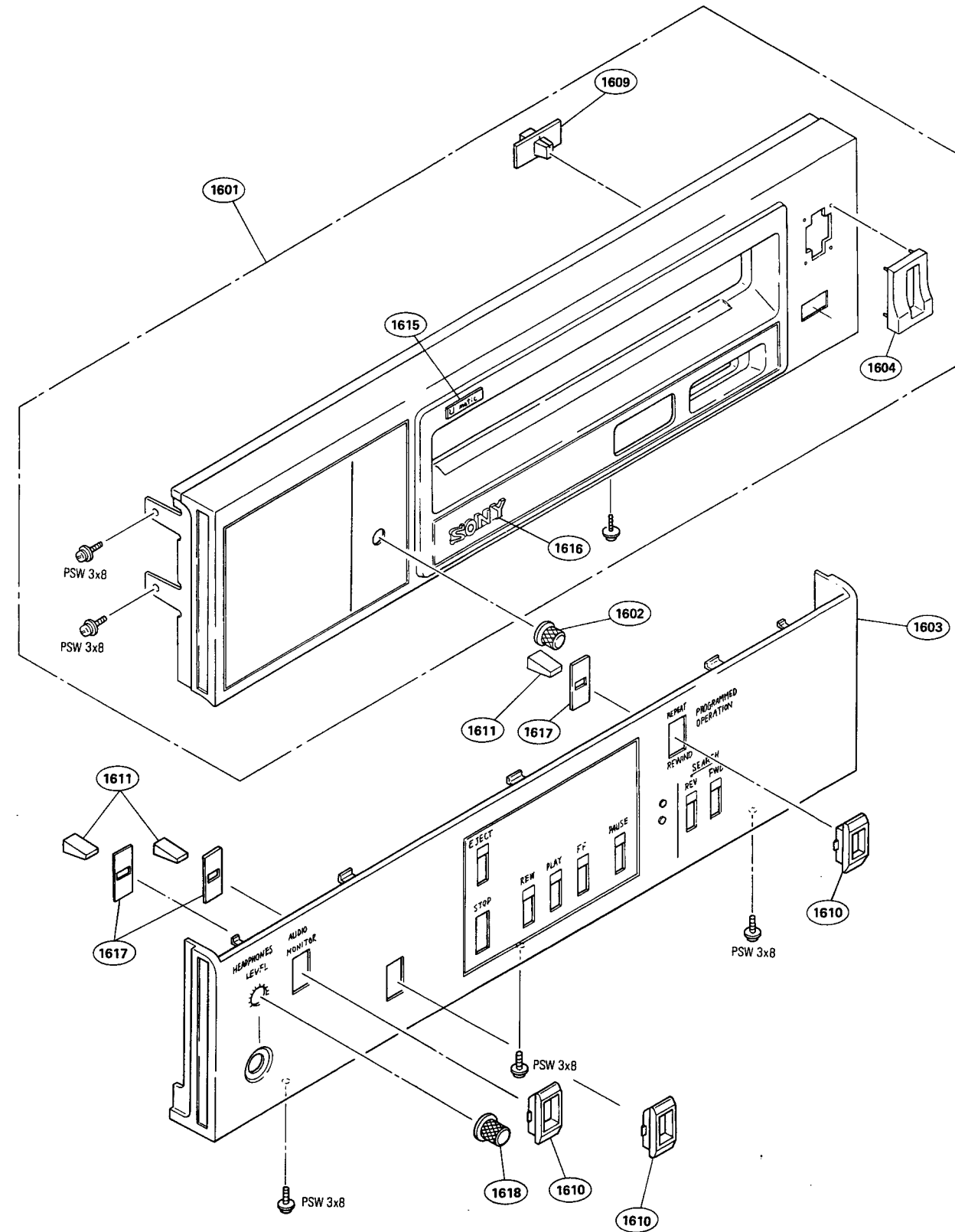
No.	Parts No.	Description
1501	X-3668-744-0	PLATE ASS'Y, SIDE
1502	X-4839-902-X	FOOT
1503	3-668-940-00	PANEL, UPPER
1504	3-672-622-00	INSULATOR (A), SY (AEP ... S/N UP TO 16290) (UK ... S/N UP TO 12660) (U/C ... S/N UP TO 10300)
1505	3-672-644-02	PLATE, BOTTOM (AEP ... S/N UP TO 16290) (UK ... S/N UP TO 12660) (U/C ... S/N UP TO 10300)
1506	3-703-043-21	LABEL, CAUTION, MAIN
1507	X-3672-609-0	PLATE ASS'Y, BOTTOM (AEP ... S/N 16291 AND HIGHER) (UK ... S/N 12661 AND HIGHER) (U/C ... S/N 10301 AND HIGHER)

NOTE:

- The shaded and -marked components are critical to safety. Replace only with same components as specified.
- Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
- Item with no part number and/or no description are not stocked because they are seldom required for routine service.

ORNAMENTAL PANEL (2) ORNAMENTAL PANEL (2)

Ornamental Panel (control panel)

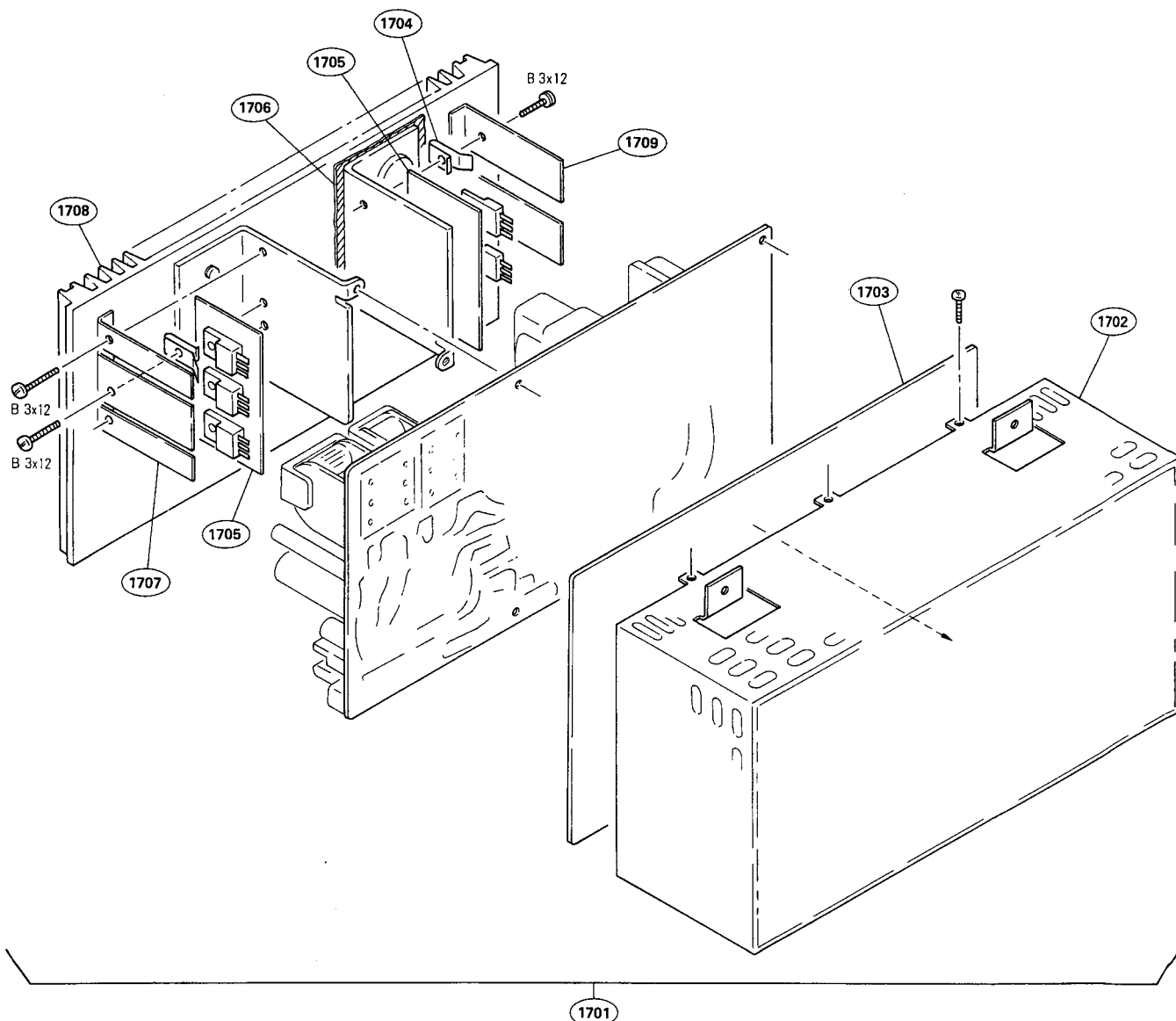


No.	Parts No.	Description
1601	A-6704-088-A	PANEL (T) BLOCK ASS'Y, FRONT, VP
1602	X-3661-073-0	KNOB ASS'Y, CONTROL
1603	X-3672-702-2	PANEL (PT) ASS'Y, KEYBOARD
1604	2-251-642-00	GUARD, POWER SWITCH
1605	2-284-722-01	KEY TOP (A)
1606	2-284-722-11	KEY TOP (A)
1607	2-284-725-00	HOLDER, KEY
1608	2-284-744-00	CUSHION (B), KEY
1609	3-667-814-00	KNOB, TIMER
1610	3-668-018-00	FRAME (MIDDLE), ORNAMENTAL
1611	3-668-028-00	KNOB (SMALL), LEVER SWITCH
1612	3-668-903-00	RETAINER (A), KEY
1613	3-668-905-00	RETAINER (C), KEY
1614	3-668-910-00	KEY TOP (STOP)
1615	3-668-913-00	LABEL, U MATIC
1616	3-668-914-00	EMBLEM, SONY
1617	3-669-909-03	PANEL, BLIND, LEVER SWITCH
1618	X-3668-750-0	KNOB ASS'Y CONTROL

- NOTE:
- The shaded and -marked components are critical to safety. Replace only with same components as specified.
 - Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.
 - Item with no part number and/or no description are not stocked because they are seldom required for routine service.

SWITCHING REGULATOR

Switching Regulator (UR-02)



No.	Parts No.	Description
 1701	1-413-075-00	SWITCHING REGULATOR (UR-02)
1702	2-403-440-00	CASE
1703	2-430-684-00	INSULATOR
1704	2-430-683-00	SPRING
1705	2-430-685-11	RUBBER, INSULATING
1706	2-430-686-11	RUBBER, INSULATING
1707	2-430-687-00	RETAINER, SEMICONDUCTOR
1708	2-430-689-00	HEAT SINK
1709	2-430-790-00	RETAINER, SEMICONDUCTOR

NOTE:

1. The shaded and  -marked components are critical to safety. Replace only with same components as specified.
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

14-3. ELECTRICAL PARTS LIST

Parts that are not listed in the "reference numbers order list" are shown in following table.

Reference numbers are omitted.

CERAMIC CAPACITOR

0.5 pF through 820 pF
50WV



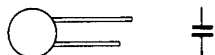
Value	Parts No.
0.5 pF	1-101-837-00
1	1-102-934-00
1.5	1-101-576-00
2	1-102-935-00
3	1-102-936-00
4	1-102-937-00
5	1-102-942-00
6	1-102-943-00
7	1-102-944-00
8	1-102-945-00
9	1-102-946-00
10	1-102-947-00
11	1-102-948-00
12	1-102-949-00
13	1-102-950-00
15	1-102-951-00
16	1-102-952-00
18	1-102-953-00
20	1-102-958-00
22	1-102-959-00

Value	Parts No.
24 pF	1-102-960-00
27	1-102-961-00
30	1-102-962-00
33	1-102-963-00
36	1-102-964-00
39	1-102-965-00
43	1-102-966-00
47	1-101-880-00
51	1-101-882-00
56	1-101-884-00
62	1-101-886-00
68	1-101-888-00
75	1-101-890-00
82	1-102-971-00
91	1-102-972-00
100	1-102-973-00
110	1-102-815-00
120	1-102-816-00
130	1-101-081-00
150	1-101-361-00

Value	Parts No.
160 pF	1-101-367-00
180	1-102-976-00
200	1-102-977-00
220	1-102-978-00
240	1-102-979-00
270	1-102-980-00
300	1-102-981-00
330	1-102-820-00
360	1-102-821-00
390	1-102-822-00
430	1-102-823-00
470	1-102-824-00
510	1-101-059-00
560	1-102-115-00
680	1-102-116-00
820	1-102-117-00

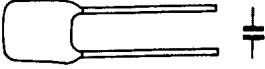
CERAMIC CAPACITOR

0.001 μ F through 0.1 μ F
50WV



Parts NO. 1-161-□□□-00		
Value	Parts No. -□□□-	Substitute
0.001 μ F	039	(1-102-074-00)
0.0012	040	
0.0015	041	
0.0018	042	
0.0022	043	(1-102-100-00)
0.0027	044	
0.0033	045	
0.0039	046	(1-102-124-00)
0.0047	047	
0.0056	048	
0.0068	049	
0.0082	050	
Value	Parts No. -□□□-	Substitute
0.01 μ F	051	(1-101-118-00)
0.012	052	
0.015	053	
0.018	054	
0.022	055	(1-101-005-00)
0.027	056	
0.033	057	
0.039	058	
0.047	059	(1-101-006-00)
0.056	060	
0.068	061	
0.082	062	
0.1	063	

MYLAR CAPACITOR



0.001 μ F through 0.22 μ F
 $\pm$ 5% 50WV

Parts No. 1-108-□□□-00

Value	Parts No. -□□□-
0.001 μ F	555
0.0011	556
0.0012	557
0.0013	558
0.0015	559
0.0016	560
0.0018	561
0.0020	562
0.0022	563
0.0024	564
0.0027	565
0.0030	566
0.0033	567
0.0036	568
0.0039	569

Value	Parts No. -□□□-
0.0043 μ F	570
0.0047	571
0.0051	572
0.0056	573
0.0062	574
0.0068	575
0.0075	576
0.0082	577
0.0091	578
0.01	579
0.011	580
0.012	581
0.013	582
0.015	583
0.016	584

Value	Parts No. -□□□-
0.018 μ F	585
0.020	586
0.022	587
0.024	588
0.027	589
0.030	590
0.033	591
0.036	592
0.039	593
0.043	594
0.047	595
0.051	596
0.056	597
0.062	598
0.068	599

Value	Parts No. -□□□-
0.075 μ F	600
0.082	601
0.091	602
0.1	603
0.11	604
0.12	605
0.13	606
0.15	607
0.16	608
0.18	609
0.20	610
0.22	611

SILVERED MICA CAPACITOR

1 pF through 620 pF
 $\pm$ 5%, 50WV



Parts No. 1-107-□□□-00

Value	Parts No. -□□□-
1 pF	098
2	099
3	100
4	101
5	102
6	103
7	104
8	105
9	106
10	061
11	062
12	063
13	064

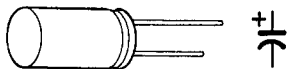
Value	Parts No. -□□□-
15 pF	065
16	066
18	067
20	068
22	069
24	070
27	071
30	072
33	073
36	074
39	075
43	076
47	077

Value	Parts No. -□□□-
51 pF	078
56	079
62	080
68	081
75	082
82	083
91	084
100	085
110	086
120	087
130	088
150	089
160	090

Value	Parts No. -□□□-
180 pF	091
200	092
220	093
240	094
270	095
300	096
330	097
360	231
390	232
430	233
470	234
510	235
560	236
620	237

ELECTROLYTIC CAPACITOR

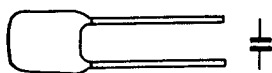
0.47 μ F through 470 μ F
6.3WV through 50 (63, 100)WV



Parts No. 1-123-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
0.47 μ F 50V	379	22 μ F 35V	342	100 μ F 50V	360
100		50	371	220 6.3	308
1 50	380	63		10	
100		33 6.3	318	16	321
2.2 50	381	10		25	334
100		16	343	35	346
3.3 25	382	25		50	361
35		35	372	330 6.3	309
50		50		10	
100		63	306	16	322
4.7 25	369	47 6.3		25	335
35		10	332	35	347
50		16		50	362
63		25	359	470 6.3	298
10 10	356	35		10	310
16		50	307	16	323
25		100 6.3		25	336
35		10	333	35	348
50	330	16		50	377
22 16		25	345	63	
25		35			

MYLAR CAPACITOR

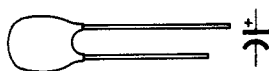


0.00047 μ F through 0.22 μ F
±5% 50WV

Parts No. 1-130-□□□-00

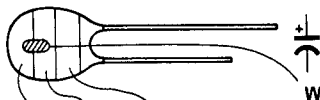
Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
0.00047 μ F	467	0.0039 μ F	478	0.033 μ F	489
0.00056	468	0.0047	479	0.039	490
0.00068	469	0.0056	480	0.047	491
0.00082	470	0.0068	481	0.056	492
0.001	471	0.0082	482	0.068	493
0.0012	472	0.01	483	0.082	494
0.0015	473	0.012	484	0.1	495
0.0018	474	0.015	485	0.12	496
0.0022	475	0.018	486	0.15	497
0.0027	476	0.022	487	0.18	498
0.0033	477	0.027	488	0.22	499

TANTALUM CAPACITOR



0.01 μ F through 100 μ F $\pm$ 10%
3.15V through 35V

NOTE: The value of the parts that are marked by * in the below table are indicated by color code. (to the value with $\pm$ 20%)



Ex. BRN GRN BLU
1 5 6

Working Voltage Color Code

15 x 10⁶ pF = 15 μ F

BLK RED YEL GRN BLU GRY WHT
10V 35 6.3 16 20 25 3.15

Parts No. 1-131-□□□-00

Value	Parts No. -□□□-
0.01 μ	35V *396
0.015	35 *397
0.022	35 *398
0.033	35 *399
0.047	35 *400
0.068	35 *401
0.1	35 341
0.15	35 342
0.22	35 343
0.33	25 *409
	35 344
0.47	20 *412
	35 345
0.68	16 *415
	25 *410
	35 346
1.0	10 *418
	25 498

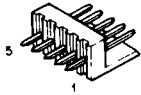
Value	Parts No. -□□□-
1.0 μ	35V 347
1.5	6.3 *421
	20 499
	25 354
	35 348
2.2	3.15 *424
	16 500
	20 361
	25 355
	35 349
3.3	10 501
	16 368
	20 362
	25 356
	35 350
4.7	6.3 502
	10 375
	16 369

Value	Parts No. -□□□-
4.7 μ	20V 363
	25 357
	35 351
6.8	3.15 503
	6.3 382
	10 376
	16 370
	20 364
	25 358
	35 352
10	3.15 389
	6.3 383
	10 377
	16 371
	20 365
	25 359
	35 353
15	3.15 390
	6.3 384

Value	Parts No. -□□□-
15 μ	10V 378
	16 372
	20 366
	25 360
22	3.15 391
	6.3 385
	10 379
	16 373
	20 367
33	3.15 392
	6.3 386
	10 380
	16 374
47	3.15 393
	6.3 387
	10 381
68	3.15 394
	6.3 388
100	3.15 395

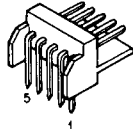
CONNECTOR

top-type receptacle



3P	1-560-008-00
5P	1-560-009-00
6P	1-560-010-00
8P	1-560-011-00
10P	1-560-012-00
12P	1-560-013-00

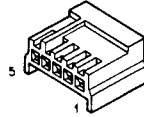
side-type receptacle



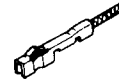
3P	1-560-014-00
5P	1-560-015-00
6P	1-560-016-00
8P	1-560-017-00
10P	1-560-018-00
12P	1-560-019-00

plug

housing contact



3P	1-561-155-00
5P	1-561-156-00
6P	1-561-157-00
8P	1-561-158-00
10P	1-561-159-00
12P	1-561-160-00

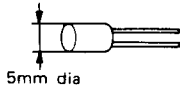


1-560-006-00
(AWG 20 ~ 26)

1-560-007-00
(AWG 26 ~ 30)

MICRO INDUCTOR

1 μ H through 470 μ H
 $\pm 5\%$



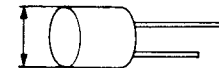
5mm dia

Parts No. 1-407-□□□.XX

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1 μ H	178	4.7 μ H	186	22 μ H	161	100 μ H	169
1.2	179	5.6	187	27	162	120	170
1.5	180	6.8	188	33	163	150	171
1.8	181	8.2	189	39	164	180	172
2.2	182	10	157	47	165	220	173
2.7	183	12	158	56	166	270	174
3.3	184	15	159	68	167	330	175
3.9	185	18	160	82	168	390	176
						470	177

MICRO INDUCTOR

470 μ H through 33 mH
 $\pm 5\%$



10mm dia

Parts No. 1-407-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
470 μ H	488	1.5 mH	494	4.7 mH	500	15 mH	506
560	489	1.8	495	5.6	501	18	507
680	490	2.2	496	6.8	502	22	508
820	491	2.7	497	8.2	503	27	509
1 mH	492	3.3	498	10	504	33	510
1.2	493	3.9	499	12	505		

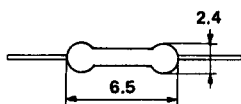
RESISTOR

Parts that are not listed in the "reference numbers order list" are shown in following table.

Reference numbers are omitted.

CARBON RESISTOR (1/4W)

± 5%, 1/4W, non-special type
1 Ω through 1 M Ω

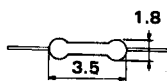


Parts No. 1-246-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1 Ω	401	33 Ω	437	1 k Ω	473	33 k Ω	509
1.1	402	36	438	1.1	474	36	510
1.2	403	39	439	1.2	475	39	511
1.3	404	43	440	1.3	476	43	512
1.5	405	47	441	1.5	477	47	513
1.6	406	51	442	1.6	478	51	514
1.8	407	56	443	1.8	479	56	515
2	408	62	444	2	480	62	516
2.2	409	68	445	2.2	481	68	517
2.4	410	75	446	2.4	482	75	518
2.7	411	82	447	2.7	483	82	519
3	412	91	448	3.0	484	91	520
3.3	413	100 Ω	449	3.3	485	100 k Ω	521
3.6	414	110	450	3.6	486	110	522
3.9	415	120	451	3.9	487	120	523
4.3	416	130	452	4.3	488	130	524
4.7	417	150	453	4.7	489	150	525
5.1	418	160	454	5.1	490	160	526
5.6	419	180	455	5.6	491	180	527
6.2	420	200	456	6.2	492	200	528
6.8	421	220	457	6.8	493	220	529
7.5	422	240	458	7.5	494	240	530
8.2	423	270	459	8.2	495	270	531
9.1	424	300	460	9.1	496	300	532
10 Ω	425	330	461	10 k Ω	497	330	533
11	426	360	462	11	498	360	534
12	427	390	463	12	499	390	535
13	428	430	464	13	500	430	536
15	429	470	465	15	501	470	537
16	430	510	466	16	502	510	538
18	431	560	467	18	503	560	539
20	432	620	468	20	504	620	540
22	433	680	469	22	505	680	541
24	434	750	470	24	506	750	542
27	435	820	471	27	507	820	543
30	436	910	472	30	508	910	544
						1 M Ω	545

CARBON RESISTOR (1/6W)

±5%, 1/6W, non-special type
2.2Ω through 1MΩ

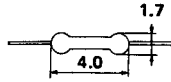


Parts No. 1-247-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1Ω	—	36Ω	796	1.2kΩ	833	43kΩ	870
1.1	—	39	797	1.3	834	47	871
1.2	—	43	798	1.5	835	51	872
1.3	—	47	799	1.6	836	56	873
1.5	—	51	800	1.8	837	62	874
1.6	—	56	801	2	838	68	875
1.8	—	62	802	2.2	839	75	876
2	—	68	803	2.4	840	82	877
2.2	767	75	804	2.7	841	91	878
2.4	768	82	805	3	842	100kΩ	879
2.7	769	91	806	3.3	843	110	880
3	770	100Ω	807	3.6	844	120	881
3.3	771	110	808	3.9	845	130	882
3.6	772	120	809	4.3	846	150	883
3.9	773	130	810	4.7	847	160	884
4.3	774	150	811	5.1	848	180	885
4.7	775	160	812	5.6	849	200	886
5.1	776	180	813	6.2	850	220	887
5.6	777	200	814	6.8	851	240	888
6.2	778	220	815	7.5	852	270	889
6.8	779	240	816	8.2	853	300	890
7.5	780	270	817	9.1	854	330	891
8.2	781	300	818	10kΩ	855	360	892
9.1	782	330	819	11	856	390	893
10Ω	783	360	820	12	857	430	894
11	784	390	821	13	858	470	895
12	785	430	822	15	859	510	896
13	786	470	823	16	860	560	897
15	787	510	824	18	861	620	898
16	788	560	825	20	862	680	899
18	789	620	826	22	863	750	900
20	790	680	827	24	864	820	901
22	791	750	828	27	865	910	902
24	792	820	829	30	866	1MΩ	903
27	793	910	830	33	867		
30	794	1kΩ	831	36	868		
33	795	1.1	832	39	869		

CARBON RESISTOR (1/8W)

±5%, 1/8W, non-special type
2.2Ω through 1MΩ



E. PARTS

Parts No. 1-246-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1Ω	—	33Ω	765	1kΩ	783	33kΩ	801
1.1	—	36	826	1.1	844	36	862
1.2	—	39	766	1.2	784	39	802
1.3	—	43	827	1.3	845	43	863
1.5	—	47	767	1.5	785	47	803
1.6	—	51	828	1.6	846	51	864
1.8	—	56	768	1.8	786	56	804
2	—	62	829	2	847	62	865
2.2	751	68	769	2.2	787	68	805
2.4	812	75	830	2.4	848	75	866
2.7	752	82	770	2.7	788	82	806
3	813	91	831	3.0	849	91	867
3.3	753	100Ω	771	3.3	789	100kΩ	807
3.6	814	110	832	3.6	850	110	868
3.9	754	120	772	3.9	790	120	808
4.3	815	130	833	4.3	851	130	869
4.7	755	150	773	4.7	791	150	809
5.1	816	160	834	5.1	852	160	870
5.6	756	180	774	5.6	792	180	810
6.2	817	200	835	6.2	853	200	871
6.8	757	220	775	6.8	793	220	811
7.5	818	240	836	7.5	854		
8.2	758	270	776	8.2	794		
9.1	819	300	837	9.1	855		
10Ω	759	330	777	10kΩ	795		
11	820	360	838	11	856		
12	760	390	778	12	796		
13	821	430	839	13	857		
15	761	470	779	15	797		
16	822	510	840	16	858		
18	762	560	780	18	798		
20	823	620	841	20	859		
22	763	680	781	22	799		
24	824	750	842	24	860		
27	764	820	782	27	800		
30	825	910	843	30	861		

Parts No. 1-247-□□□-00

Value	Parts No. -□□□-
240kΩ	054
270	046
300	055
330	047
360	056
390	048
430	057
470	049
510	058
560	050
620	059
680	051
750	060
820	052
910	061
1MΩ	053

E. PARTS**ABBREVIATIONS**

Ref. No.	Description	Ref. No.	Description	Ref. No.	Description
C□□, CV□□	CAPACITOR	IC□□	IC	Q□□	TRANSISTOR
CF□□	CERAMIC FILTER	J□□	JACK	R□□, RV□□	RESISTOR
CN□□	CONNECTOR	L□□	INDUCTOR	RY□□	RELAY
D□□	DIODE	M□□	MOTOR	S□□, SW□□	SWITCH
DL□□	DELAY LINE	ME□□	METER	SB□□	SOLAR BATTERY
F□□	FUSE	MIC□□	MICROPHONE	T□□	TRANSFORMER
FB□□	FERRITE BEAD	PG□□	PG COIL	TH□□	THERMISTOR
FL□□	FILTER	PL□□	LAMP	X□□	CRYSTAL
H□□	HEAD	PM□□	SOLENOID		

All capacitors are in micro farads unless otherwise specified.

All inductors are in micro henries unless otherwise specified.

All resistors are in ohms.

AC-35, AH-3, AP-7, CC-9, CC-10

E. PARTS

Ref.No. Parts No. Description

AC-35 BOARD

1-606-380-00 PRINTED CIRCUIT BOARD,
AC-35
1-533-037-XX HOLDER, FUSE

⚠ C1 1-130-456-00 METALIZED FILM 0.022
20% 250V

⚠ C2 1-130-710-00 POLYESTEL FILM 0.1 20%
250V

⚠ C3 1-130-710-00 POLYESTEL FILM 0.1 20%
250V

⚠ CN4 1-506-371-00 2P PLUG
⚠ 1-509-910-00 2P HOUSING
⚠ 1-509-898-00 RECEPTACLE

⚠ CN5 1-560-136-00 4P PLUG
⚠ 1-561-427-00 4P HOUSING
⚠ 1-561-432-00 RECEPTACLE

⚠ F1 1-532-203-00 250V, 2A

⚠ L1 1-421-621-00 CHOKE COIL
⚠ L2 1-421-621-00 CHOKE COIL

⚠ T1 1-421-470-00 LINE FILTER

⚠ T2 1-421-470-00 LINE FILTER

⚠ T3 1-421-259-00 LINE FILTER

AH-3 BOARD

1-586-192-00 PRINTED CIRCUIT BOARD,
AH-3

Ref.No. Parts No. Description

AP-7 BOARD

A-6713-121-A MOUNTED CIRCUIT BOARD,
AP-7

All the transistors that are not listed
in this board are 2SC1364 (Parts No.
8-729-663-47)

D501 8-719-815-55 1S1555
D502 8-719-200-02 10E-2

IC101 8-759-115-83 **μPC1158H2(NEC)**
IC102 8-759-271-40 **TA7140P(TOSHIBA)**
IC201 8-759-115-83 **μPC1158H2(NEC)**
IC202 8-759-271-40 **TA7140P(TOSHIBA)**

Q503 8-729-612-77 2SA1027R
Q504 8-729-612-77 2SA1027R

RV101 1-224-253-XX VAR, METAL 22K
RV102 1-224-252-XX VAR, METAL 10K
RV201 1-224-253-XX VAR, METAL 22K
RV202 1-224-252-XX VAR, METAL 10K

CC-9 BOARD

1-604-429-00 PRINTED CIRCUIT BOARD,
CC-9

CC-10 BOARD

1-604-430-00 PRINTED CIRCUIT BOARD,
CC-10

IC1 8-719-104-42 **PS4005(NEC)**

NOTES:

1. The shaded and **⚠**-marked components are critical to safety.
Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.

CC-11, CN-42, DC-13B, DR-17B, FR-11, EC-19

E. PARTS

Ref.No. Parts No. Description

CC-11 BOARD

1-604-431-00 PRINTED CIRCUIT BOARD,
CC-11

IC1 8-719-104-42 PS4005(NEC)

CN-42 BOARD

1-606-379-00 PRINTED CIRCUIT BOARD,
CN-42

DC-13B BOARD

1-606-378-00 PRINTED CIRCUIT BOARD,
DC-13B

1-533-037-00 HOLDER, FUSE

D1 8-719-815-55 1S1555

1-532-237-00 250V, 3.15A

1-532-286-00 250V, 2.5A

Q1 8-729-663-48 2SC1364

DR-17B BOARD

A-6715-143-A MOUNTED CIRCUIT BOARD,
DR-17B

D1 8-719-200-02 10E-2

D2 8-719-200-02 10E-2

D3 8-719-200-02 10E-2

D4 8-719-200-02 10E-2

D51 8-719-911-55 U05G

Ref.No. Parts No. Description

Q1 8-729-663-47 2SC1364
Q2 8-729-663-47 2SC1364
Q3 8-729-384-48 2SA844
Q4 8-729-382-63 2SC1826-Y
Q5 8-729-377-12 2SA771

Q6 8-729-377-12 2SA771
Q7 8-729-382-63 2SC1826-Y
Q8 8-729-384-48 2SA844
Q9 8-729-663-47 2SC1364
Q10 8-729-663-47 2SC1364

Q51 8-729-663-47 2SC1364
Q52 8-729-377-12 2SA771
Q53 8-729-377-12 2SA771

1-202-850-00 COMPOSITION 2.2 5% 1/4W

1-202-850-00 COMPOSITION 2.2 5% 1/4W

1-202-850-00 COMPOSITION 2.2 5% 1/4W

1-202-850-00 COMPOSITION 2.2 5% 1/4W

1-202-850-00 COMPOSITION 2.2 5% 1/4W

1-207-621-00 WIREWOUND 1.5 10% 2W

FR-11 BOARD

1-603-585-00 PRINTED CIRCUIT BOARD,
FR-11

IC1 8-719-104-42 PS4005(NEC)

IC2 8-719-104-42 PS4005(NEC)

EC-19 BOARD

1-603-729-00 PRINTED CIRCUIT BOARD,
EC-19

NOTES:

- The shaded and -marked components are critical to safety. Replace only with same components as specified.

- Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

HP-6, KY-21C, LM-9, MR-8A

E. PARTS

Ref.No.	Parts No.	Description
HP-6 BOARD		
	1-606-366-00	PRINTED CIRCUIT BOARD, HP-6
CN1	1-507-553-00	JACK "HEADPHONES"
RV1	1-228-218-00	VAR, CARBON 500/500

KY-21C BOARD		
	A-6728-404-A	MOUNTED CIRCUIT BOARD, KY-21C
D1	8-719-904-55	GL-5HD5
D2	8-719-904-55	GL-5HD5
D3	8-719-904-55	GL-5HD5
D4	8-719-904-55	GL-5HD5
D5	8-719-904-55	GL-5HD5
PL1	1-518-262-00	PILOT 5V, 60mA
PL2	1-518-262-00	PILOT 5V, 60mA
PL3	1-518-262-00	PILOT 5V, 60mA
PL4	1-518-262-00	PILOT 5V, 60mA

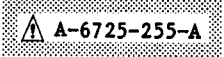
Q1	8-729-178-54	2SC2785
Q2	8-729-178-54	2SC2785
Q3	8-729-117-54	2SA1175
Q4	8-729-178-54	2SC2785
Q5	8-729-178-54	2SC2785

Q6	8-729-178-54	2SC2785
Q7	8-729-178-54	2SC2785

S1	1-516-963-00	SLIDE "AUDIO MONITOR"
S2	1-516-995-00	SLIDE "PROGRAMMED OPERATION"
S4	1-516-995-00	SLIDE "SYSTEM SELECT"
S5	1-552-539-00	KEY "STOP"
S6	1-552-539-00	KEY "EJECT"
S7	1-552-539-00	KEY "F FWD"
S8	1-552-539-00	KEY "PLAY"
S9	1-552-539-00	KEY "REW"
S10	1-552-539-00	KEY "FWDx5"
S11	1-552-539-00	KEY "REVx5"
S12	1-552-539-00	KEY "PAUSE"

Ref.No.	Parts No.	Description
T1	1-427-284-00	OUTPUT
T2	1-427-284-00	OUTPUT

LM-9 BOARD		
	1-606-377-00	PRINTED CIRCUIT BOARD, LM-9

MR-8A BOARD		
	 A-6725-255-A	MOUNTED CIRCUIT BOARD, MR-8A

All the diodes that are not listed in this board are 1S1555 (Parts No. 8-719-815-55)

All the transistors that are not listed in this board are 2SC1364 (Parts No. 8-729-663-47)

C1	1-131-358-00	TANTALUM 6.8 10% 25V
C3	1-131-358-00	TANTALUM 6.8 10% 25V
C12	1-131-358-00	TANTALUM 6.8 10% 25V

D2	8-719-200-02	10E-2
D3	8-719-200-02	10E-2
D4	8-719-200-02	10E-2
D8	8-719-200-02	10E-2
D9	8-719-200-02	10E-2
D10	8-719-200-02	10E-2
D14	8-719-200-02	10E-2
D15	8-719-200-02	10E-2
D16	8-719-200-02	10E-2
D19	8-719-200-02	10E-2

D20	8-719-200-02	10E-2
D21	8-719-200-02	10E-2
D24	8-719-200-02	10E-2
D25	8-719-200-02	10E-2
D26	8-719-200-02	10E-2

D27	8-719-200-02	10E-2
D28	8-719-200-02	10E-2
D29	8-719-200-02	10E-2

IC1	8-759-135-80	uPC358C(LM358JG;TI)
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NOTES:

- The shaded and  -marked components are critical to safety. Replace only with same components as specified.

- Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

MR-8A, MR-11B

E. PARTS

Ref.No. Parts No. Description

Q2 8-729-103-43 2SB734
Q4 8-729-177-43 2SD774
Q6 8-729-103-43 2SB734
Q9 8-729-177-43 2SD774
Q12 8-729-103-43 2SB734

Q14 8-729-177-43 2SD774
Q16 8-729-103-43 2SB734
Q19 8-729-177-43 2SD774
Q22 8-729-811-11 2SD1111
Q24 8-729-199-80 2SD998

Q25 8-729-811-11 2SD1111
Q28 8-729-199-80 2SD998
Q31 8-729-384-48 2SA844
Q32 8-729-384-48 2SA844
Q42 8-729-177-43 2SD774
Q43 8-729-889-40 2SD894

R50 1-210-859-00 CARBON 1.2 5% 1/8W
R56 1-210-859-00 CARBON 1.2 5% 1/8W

 R101 1-207-674-00 WIREWOUND 4.7 10% 6W

RV1 1-224-251-XX VAR, METAL 4.7K
RV2 1-224-251-XX VAR, METAL 4.7K
RV3 1-224-253-XX VAR, METAL 22K

MR-11B BOARD 19691 AND LATER (AEP)
14761 AND LATER (UK)
10301 AND LATER (U/C)

 A-6725-359-A MOUNTED CIRCUIT BOARD,
MR-11B

All the diodes that are not listed in
this board are 1S1555.(Parts No.
8-719-815-55)

All the transistors that are not listed
in this board are 2SC1364.(Parts No.
8-729-663-47)

D1 8-719-200-02 10E-2
D2 8-719-200-02 10E-2
D3 8-719-200-02 10E-2
D4 8-719-200-02 10E-2
D32 8-719-200-02 10E-2

Ref.No. Parts No. Description

D33 8-719-200-02 10E-2
D34 8-719-200-02 10E-2
D35 8-719-200-02 10E-2
D36 8-719-200-02 10E-2
D37 8-719-200-02 10E-2

IC2 8-759-135-80 uPC358C(LM358JG;TI)
IC3 8-759-240-66 TC4066BP(CD4066AE/BE;RCA)
IC4 8-759-240-69 TC4069UBP(CD4069UBE;RCA)
IC5 8-759-645-17 M54517P(MITSUBISHI)
IC7 8-759-240-01 TC4001BP(CD4001AE/BE;RCA)
IC8 8-759-600-24 M54543L(MITSUBISHI)
IC9 8-759-600-24 M54543L(MITSUBISHI)

Q1 8-729-900-37 DTC124EF
Q2 8-729-900-37 DTC124EF
Q3 8-729-900-37 DTC124EF
Q4 8-729-900-37 DTC124EF
Q5 8-729-900-37 DTC124EF

Q6 8-729-900-37 DTC124EF
Q7 8-729-900-37 DTC124EF
Q8 8-729-900-37 DTC124EF
Q9 8-729-900-37 DTC124EF
Q10 8-729-900-37 DTC124EF

Q11 8-729-900-37 DTC124EF
Q12 8-729-900-37 DTC124EF
Q13 8-729-900-37 DTC124EF
Q25 8-729-177-43 2SD774
Q26 8-729-889-40 2SD894

Q27 8-729-663-47 2SC1364
Q28 8-729-663-47 2SC1364
Q32 8-729-811-11 2SD1111
Q33 8-729-663-47 2SC1364
Q34 8-729-199-80 2SD998

Q35 8-729-811-11 2SD1111
Q36 8-729-663-47 2SC1364
Q37 8-729-663-47 2SC1364
Q38 8-729-199-80 2SD998
Q39 8-729-663-47 2SC1364
Q40 8-729-663-47 2SC1364

 R63 1-210-859-00 CARBON 1.2 5% 1/8W
 R73 1-210-859-00 CARBON 1.2 5% 1/8W
 R83 1-210-859-00 CARBON 1.2 5% 1/8W
 R91 1-207-674-00 WIREWOUND 4.7 10% 6W

RV1 1-224-251-XX VAR, METAL 4.7K
RV2 1-224-251-XX VAR, METAL 4.7K
RV4 1-224-252-XX VAR, METAL 10K

NOTES:

1. The shaded and  -marked components are critical to safety.
Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.

PD-16A, PH-4, PH-5, PT-9, SV-44C

E. PARTS

Ref.No. Parts No. Description

PD-16A BOARD

A A-6717-250-A MOUNTED CIRCUIT BOARD,
PD-16A

D4 8-719-200-02 10K-2
D5 8-719-200-02 10K-2
D6 8-719-200-02 10K-2
D7 8-719-200-02 10K-2
D8 8-719-200-02 10K-2

D9 8-719-200-02 10K-2
D10 8-719-200-02 10K-2
D11 8-719-200-02 10K-2
D12 8-719-200-02 10K-2
D13 8-719-200-02 10K-2

D14 8-719-200-02 10K-2
D15 8-719-200-02 10K-2
D16 8-719-904-55 GL-5HD5

Q4 8-729-811-11 2SD1111
Q5 8-729-663-47 2SC1364
Q6 8-729-199-80 2SD998
Q7 8-729-811-11 2SD1111
Q8 8-729-663-47 2SC1364

Q9 8-729-199-80 2SD998
Q10 8-729-811-11 2SD1111
Q11 8-729-663-47 2SC1364
Q12 8-729-199-80 2SD998
Q13 8-729-811-11 2SD1111

Q14 8-729-663-47 2SC1364
Q15 8-729-199-80 2SD998

A R8 1-247-072-00 CARBON 1.2 5% 1/4W

A R15 1-247-072-00 CARBON 1.2 5% 1/4W

A R19 1-247-072-00 CARBON 1.2 5% 1/4W

A R23 1-247-072-00 CARBON 1.2 5% 1/4W

PH-4 BOARD

1-603-589-00 PRINTED CIRCUIT BOARD,
PH-4

NOTES:

- The shaded and **A**-marked components are critical to safety.
Replace only with same components as specified.

Ref.No. Parts No. Description

IC1 1-806-232-11 MB-1102 "TENSION REGULATOR"

PH-5 BOARD

1-603-737-00 PRINTED CIRCUIT BOARD,
PH-5

D1 8-719-951-04 BR5104S

Q1 8-729-810-22 SPS102

PT-9 BOARD

1-605-018-00 PRINTED CIRCUIT BOARD,
PT-9

Q1 8-729-377-13 2SA771-Y

SV-44C BOARD

A A-6715-144-A MOUNTED CIRCUIT BOARD,
SV-44C

All the diodes that are not listed in
this board are 1SS119 (Parts No.
8-719-911-19)

All the transistors that are not listed
in this board are 2SC1364 (Parts No.
8-729-663-47)

C16 1-107-210-00 MICA 22PF 5% 500V
C37 1-123-311-00 ELECT 1000 20% 10V
C54 1-130-224-00 POLYPROPYLENE 0.015 5% 50V
C74 1-127-468-00 ALUMINUM 0.22 5% 16V

D36 8-719-709-25 1S1925-P

IC1 8-759-240-13 TC4013BP(TOSHIBA)
IC2 8-759-240-11 TC4011BP(CD4011AE/BE;RCA)
IC3 8-759-132-40 uPC324C(LM324;WSC)
IC4 8-759-240-25 TC4025BP(CD4025AE/BE;RCA)
IC6 8-751-941-05 CX194B-5 (SONY)

- Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in **Bold-Face type** will be processed, but allow for additional delivery time.

SV-44C, SW-43, SW-50, SY-75A

E. PARTS

Ref.No. Parts No. Description

IC7	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC8	8-759-135-80	uPC358C(LM358JG;TI)
IC9	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC10	8-759-132-40	uPC324C(LM324;NSC)
IC11	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC14	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC15	8-759-132-40	uPC324C(LM324;NSC)
IC16	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC17	8-759-240-30	TC4030BP(CD4030AE/BE;RCA)
IC18	8-759-745-50	HJM4558D-D (RC4558;RAYTHEON)
IC19	8-759-145-58	uPC4558C(RC4558;RAYTHEON)
IC21	8-759-045-84	MC14584BCP(MOTOROLA)
IC22	8-759-132-40	uPC324C(LM324;NSC)
IC23	8-759-240-11	TC4011BP(CD4011AE/BE;RCA)
IC24	8-759-240-23	TC4023BP(CD4023AE/BE;RCA)
IC25	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC26	8-759-240-30	TC4030BP(CD4030AE/BE;RCA)
IC27	8-759-240-11	TC4011BP(CD4011AE/BE;RCA)
IC28	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC29	8-759-240-24	TC4024BP(D4024AE/BE;RCA)
IC501	8-759-240-11	TC4011BP(CD4011AE/BE;RCA)

Q1	8-724-375-01	2SC403C
Q7	8-729-384-48	2SA844
Q14	8-761-622-00	2SC1636
Q25	8-729-384-48	2SA844
Q26	8-729-177-43	2SD774

R14 1-207-636-00 WIREWOUND 100 10Z 3W

R31 1-244-859-00 CARBON 270 5Z 1/2W

R35 1-207-636-00 WIREWOUND 100 10Z 3W

R76 1-214-160-00 METAL 15K 1Z 1/4W
R128 1-212-710-00 METAL 220K 1Z 1/2W

R193 1-214-178-00 METAL 82K 1Z 1/4W

R258 1-207-636-00 WIREWOUND 100 10Z 3W

R287 1-207-636-00 WIREWOUND 100 10Z 3W

Ref.No. Parts No. Description

RV1	1-224-254-XX	VAR, METAL 47K
RV2	1-224-254-XX	VAR, METAL 47K
RV3	1-224-254-XX	VAR, METAL 47K
RV4	1-224-249-XX	VAR, METAL 1K
RV5	1-224-252-XX	VAR, METAL 10K
RV6	1-224-252-XX	VAR, METAL 10K
RV7	1-224-252-XX	VAR, METAL 10K
RV8	1-224-254-XX	VAR, METAL 47K
RV9	1-224-249-XX	VAR, METAL 1K
RV10	1-224-255-XX	VAR, METAL 100K
RV11	1-224-252-XX	VAR, METAL 10K
RV12	1-224-250-XX	VAR, METAL 2.2K
RV13	1-224-250-XX	VAR, METAL 2.2K
RV14	1-224-252-XX	VAR, METAL 10K
RV15	1-224-255-XX	VAR, METAL 100K
RV16	1-224-248-XX	VAR, METAL 470
RV17	1-224-254-XX	VAR, METAL 47K

X1 1-527-376-00 OSC. 3.579545MHz

SW-43 BOARD

1-603-434-00 PRINTED CIRCUIT BOARD,
SW-43

IC1 8-719-104-42 PS4005(NEC)

SW-50 BOARD

1-603-435-00 PRINTED CIRCUIT BOARD,
SW-50

IC1 8-719-104-42 PS4005(NEC)

SY-75A BOARD

A-6717-248-C MOUNTED CIRCUIT BOARD,
SY-75A
S/N UP TO 14740 (AEP)
S/N UP TO 12210 (UK)
S/N UP TO 10300 (U/C)

NOTES:

- The shaded and **A**-marked components are critical to safety.
Replace only with same components as specified.

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Ref.No. Parts No. Description



A-6717-248-D

MOUNTED CIRCUIT BOARD,
SY-75A
S/N 14741 AND LATER (AEP)
S/N 12211 AND LATER (UK)
S/N 10301 AND LATER (U/C)

All the diodes that are not listed in this board
are 1S1555 (Parts No. 8-719-815-55)

All the transistors that are not listed in this
board are 2SC1364 (Parts No. 8-729-663-47)

*C50	1-161-021-00	CERAMIC 0.047 10% 25V
D404	8-719-200-02	10E-2
IC1	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC2	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC3	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC4	8-759-645-29	M54529P (MITSUBISHI)
*IC4	8-759-201-08	TD62302P (TOSHIBA)
IC5	8-759-145-58	μPC4558C (RC4558; RAYTHEON)
IC6	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC7	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC8	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC9	8-759-645-29	M54529P (MITSUBISHI)
IC11	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC12	8-759-240-11	TC4011BP (CD4011AE/BE; RCA)
IC13	8-759-240-71	TC4071BP (CD4071BE; RCA)
IC16	8-759-240-11	TC4011BP (CD4011AE/BE; RCA)
IC17	8-759-240-71	TC4071BP (CD4071BE; RCA)
IC18	8-759-240-73	TC4073BP (CD4073BE; RCA)
IC19	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC20	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC23	8-759-145-58	μPC4558C (RC4558; RAYTHEON)
*IC23	8-759-240-20	TC4020BP (CD4020BE; RCA)
IC24	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC25	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC26	8-759-240-71	TC4071BP (CD4071BE; RCA)
IC28	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC29	8-759-045-38	MC14538BCP (MOTOROLA)
IC30	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
*IC30	8-759-045-84	MC14584BCP (MOTOROLA)
IC33	8-759-240-75	TC4075BP (CD4075BE; RCA)

* S/N 14741 AND LATER (AEP)
S/N 12211 AND LATER (UK)
S/N 10301 AND LATER (U/C)

Ref.No. Parts No. Description

IC36	8-757-570-00	CX-757 (SONY)
IC37	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC38	8-759-240-25	TC4025BP (CD4025AE/BE; RCA)
IC39	8-759-240-30	TC4030BP (CD4030AE/BE; RCA)
IC41	8-759-240-73	TC4073BP (CD4073BE; RCA)
IC44	8-759-645-29	M54529P (MITSUBISHI)
*IC44	8-759-201-08	TD62302P (TOSHIBA)
IC45	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC46	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC49	8-759-729-03	NJM2903D (JRC)
IC50	8-759-745-50	NJM4558D-DS (RC4558; RAYTHEON)
IC51	8-759-645-29	M54529P (MITSUBISHI)
*IC51	8-759-145-58	μPC4558C (RC4558; RAYTHEON)
IC52	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC54	8-759-240-11	TC4011BP (CD4011AE/BE; RCA)
IC55	8-759-240-13	TC4013BP (TOSHIBA)
IC56	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC57	8-759-645-29	M54529P (MITSUBISHI)
*IC57	8-759-045-38	MC14538BCP (MOTOROLA)
IC58	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC59	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC60	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC61	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC62	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC63	8-759-240-71	TC4071BP (CD4071BE; RCA)
IC64	8-759-600-39	M54529P (MITSUBISHI)
*IC64	8-759-201-08	TD62302P (TOSHIBA)
IC65	8-759-645-29	M54529P (MITSUBISHI)
*IC65	8-759-201-08	TD62302P (TOSHIBA)
IC66	8-759-045-84	MC14584BCP (MOTOROLA)
*IC66	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC67	8-759-645-29	M54529P (MITSUBISHI)
IC68	8-759-240-11	TC4011BP (CD4011AE/BE; RCA)
IC69	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC70	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC71	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC72	8-759-240-13	TC4013BP (TOSHIBA)
IC73	8-759-240-73	TC4073BP (CD4073BE; RCA)
IC74	8-759-245-20	TC4520BP (MC14520BCP; MOTOROLA)
IC75	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC76	8-759-645-29	M54529P (MITSUBISHI)
*IC76	8-759-201-08	TD62302P (TOSHIBA)
IC77	8-759-240-81	TC4081BP (CD4081BE; RCA)
IC78	8-759-240-25	TC4025BP (CD4025AE/BE; RCA)
IC79	8-759-240-69	TC4069UBP (CD4069UBE; RCA)
IC80	8-759-240-01	TC4001BP (CD4001AE/BE; RCA)
IC81	8-759-240-11	TC4011BP (CD4011AE/BE; RCA)
*IC81	8-759-240-81	TC4081BP (CD4081BE; RCA)

NOTES:

1. The shaded and -marked components are critical to safety.
Replace only with same components as specified.

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SY-75A, VP-13

E. PARTS

Ref.No. Parts No. Description

Q1 8-729-384-48 2SA844
Q7 8-729-384-48 2SA844
Q13 8-729-384-48 2SA844
Q21 8-729-177-32 2SD773
*Q21 8-729-382-64 2SC1826
Q405 8-729-384-48 2SA844
*Q410 8-729-384-48 2SA844

A R236 1-207-619-00 WIREWOUND 0.82 10% 3W

RV2 1-224-253-XX VAR, METAL 22K

VP-13 BOARD

A A-6711-338-A MOUNTED CIRCUIT BOARD,
VP-13

All the diodes that are not listed in
this board are 1S1555 (Parts No.
8-719-815-55)

C6 1-131-344-00 TANTALUM 0.33 10% 35V
C7 1-107-169-00 MICA 100PF 5% 500V
C10 1-131-369-00 TANTALUM 4.7 10% 16V
C13 1-107-168-00 MICA 91PF 5% 500V
C16 1-107-169-00 MICA 100PF 5% 500V
C17 1-131-344-00 TANTALUM 0.33 10% 35V
C23 1-107-209-00 MICA 20PF 5% 500V
C24 1-107-166-00 MICA 62PF 5% 500V
C25 1-107-169-00 MICA 100PF 5% 500V
C27 1-107-208-00 MICA 18PF 5% 500V
C31 1-107-168-00 MICA 91PF 5% 500V
C33 1-131-404-00 TANTALUM 0.22 10% 25V
C37 1-131-361-00 TANTALUM 2.2 1% 20V
C56 1-130-016-00 POLYPROPYLENE 680PF 5% 50V
C64 1-107-169-00 MICA 100PF 5% 500V
C67 1-107-206-00 MICA 15PF 5% 500V
C76 1-107-206-00 MICA 15PF 5% 500V
C81 1-107-037-00 MICA 82PF 5% 500V
C86 1-107-166-00 MICA 62PF 5% 500V
C87 1-107-206-00 MICA 15PF 5% 500V
C88 1-107-169-00 MICA 100PF 5% 500V
C90 1-107-159-00 MICA 33PF 5% 500V

* S/N 14741 AND LATER (AEP)
S/N 12211 AND LATER (UK)
S/N 10301 AND LATER (U/C)

Ref.No. Parts No. Description

C101 1-107-171-00 MICA 120PF 5% 500V
C115 1-123-311-00 ELECT 1000 20% 10V
C116 1-123-311-00 ELECT 1000 20% 10V
C121 1-107-047-00 MICA 5.6PF 0.5PF 500V
C122 1-131-408-00 TANTALUM 1 10% 25V
C128 1-107-047-00 MICA 5.6PF 0.5PF 500V
C130 1-131-408-00 TANTALUM 1 10% 25V
C139 1-107-037-00 MICA 82PF 5% 500V
C149 1-107-169-00 MICA 100PF 5% 500V
C150 1-107-169-00 MICA 100PF 5% 500V
C151 1-107-165-00 MICA 56PF 5% 500V
C176 1-107-157-00 MICA 27PF 5% 500V

CV1 1-141-246-00 TRIMMER 18PF
CV2 1-141-244-00 TRIMMER 7PF
CV3 1-141-244-00 TRIMMER 7PF

D6 8-719-139-07 RD3.9E
D7 8-719-130-07 RD3.0E
D10 8-719-151-07 RD5.1E-B

DL1 1-415-231-00 0.3uS
DL2 1-415-231-00 0.3uS
DL3 1-415-242-00 42nS
DL4 1-415-146-00 1H

FL1 1-231-295-00 BPF
FL2 1-235-044-00 LFF
FL3 1-235-002-00 LFF

IC1 8-759-908-59 CX-859(SONY)
IC2 8-751-880-00 CX-188(SONY)
IC3 8-759-240-01 TC4001BP(CD4001AE/BE;RCA)
IC4 8-751-870-00 CX-187(SONY)
IC5 8-759-200-60 TA7060AP(TA7060P;TOSHIBA)

IC6 8-751-340-00 CX-134A(SONY)
IC8 8-759-131-11 uPC311C(NEC)

L23 1-420-984-00 AIR CORE

LV1 1-425-982-00 BPT
LV2 1-411-106-00 TUNING-T
LV3 1-425-880-00 BURST AMP
LV4 1-411-107-00 PEAKING
LV5 1-411-107-00 PEAKING

NOTES:

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Ref.No. Parts No. Description

Q1 8-724-375-01 2SC403C
 Q2 8-724-375-01 2SC403C
 Q3 8-724-375-01 2SC403C
 Q4 8-729-663-47 2SC1364
 Q5 8-729-384-48 2SA844

Q6 8-729-663-47 2SC1364
 Q7 8-729-663-47 2SC1364
 Q8 8-729-663-47 2SC1364
 Q9 8-724-375-01 2SC403C
 Q10 8-729-663-47 2SC1364

Q11 8-724-375-01 2SC403C
 Q12 8-724-375-01 2SC403C
 Q13 8-729-663-47 2SC1364
 Q14 8-724-375-01 2SC403C
 Q15 8-724-375-01 2SC403C

Q16 8-724-375-01 2SC403C
 Q17 8-724-375-01 2SC403C
 Q18 8-724-375-01 2SC403C
 Q19 8-724-375-01 2SC403C
 Q20 8-724-375-01 2SC403C

Q21 8-724-375-01 2SC403C
 Q22 8-724-375-01 2SC403C
 Q23 8-724-375-01 2SC403C
 Q24 8-724-375-01 2SC403C
 Q25 8-724-375-01 2SC403C

Q26 8-761-622-00 2SC1636
 Q27 8-729-384-48 2SA844
 Q28 8-724-375-01 2SC403C
 Q29 8-724-375-01 2SC403C
 Q30 8-724-375-01 2SC403C

Q31 8-724-375-01 2SC403C
 Q32 8-729-384-48 2SA844
 Q33 8-729-113-33 2SB733
 Q34 8-765-423-00 2SK152-3
 Q35 8-765-423-00 2SK152-3

Q36 8-729-663-47 2SC1364
 Q37 8-724-375-01 2SC403C
 Q38 8-724-375-01 2SC403C
 Q39 8-729-384-48 2SA844
 Q40 8-724-375-01 2SC403C

Q41 8-724-375-01 2SC403C
 Q42 8-724-375-01 2SC403C
 Q43 8-724-375-01 2SC403C
 Q44 8-724-375-01 2SC403C
 Q45 8-724-375-01 2SC403C

Ref.No. Parts No. Description

Q46 8-729-663-47 2SC1364
 Q47 8-729-663-47 2SC1364
 Q48 8-729-663-47 2SC1364

R192 1-244-861-00 CARBON 330 5% 1/2W

 R211 1-206-640-00 METAL 100 5% 2W

RV1 1-224-251-XX VAR, METAL 4.7K
 RV2 1-224-251-XX VAR, METAL 4.7K
 RV3 1-224-253-XX VAR, METAL 22K
 RV4 1-224-253-XX VAR, METAL 22K
 RV5 1-224-255-XX VAR, METAL 100K

RV6 1-224-249-XX VAR, METAL 1K
 RV7 1-224-251-XX VAR, METAL 4.7K
 RV8 1-224-134-XX VAR, METAL 470K
 RV9 1-224-252-XX VAR, METAL 10K
 RV10 1-224-251-XX VAR, METAL 4.7K

RV11 1-224-250-XX VAR, METAL 2.2K
 RV12 1-224-550-21 VAR, METAL 220
 RV13 1-224-250-XX VAR, METAL 2.2K
 RV14 1-224-550-21 VAR, METAL 220
 RV15 1-224-250-XX VAR, METAL 2.2K

RV16 1-224-250-XX VAR, METAL 2.2K
 RV17 1-224-250-XX VAR, METAL 2.2K
 RV18 1-224-250-XX VAR, METAL 2.2K
 RV19 1-224-250-XX VAR, METAL 2.2K
 RV20 1-224-134-XX VAR, METAL 470K
 RV21 1-224-251-XX VAR, METAL 4.7K

T1 1-426-018-00 AF
 T2 1-426-018-00 AF

X1 1-527-345-00 OSC. 4.433619MHz

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FRAME

E. PARTS

Ref.No. Parts No. Description

FRAME

△ 1-413-075-00 SWITCHING REGULATOR
(UR-02)

△ CN1001 1-509-546-00 3P AC INLET

CN1004 1-507-251-XX JACK JM-35 M-10
"AUDIO MONITOR"

CN1005 1-507-732-XX JACK 2P
CN1006 "AUDIO LINE OUT"

CN1007 1-507-473-XX JACK JM-35 M-7A
"RX-DATA"

CN1009 1-562-261-00 RECEPTACLE BNC
"VIDEO LINE OUT"

CN1010 1-561-583-00 RECEPTACLE 33P FEMALE
"REMOTE"
1-561-066-00 CONTACT

CN1011 1-560-403-00 RECEPTACLE, 6P FEMALE
"RF MOD"

CN1012 1-555-977-00 F RECEPTACLE
"RF OUT"

CN1013 1-561-671-00 RECEPTACLE, 8P FEMALE
"TV"

1-561-671-00 CONTACT
CN1019 1-562-261-00 RECEPTACLE BNC
"SYNC IN"

CS1001 1-586-633-00 CONDENSATION SENSOR

H1001 A-6709-400-A DRUM ASSY, UPPER DUR-23-R
H1002 8-829-358-41 PP150-5803B
"AUDIO PB/CTL PB"
H1003 8-825-514-20 PP170-58
"CTL PB"

Ref.No. Parts No. Description

M1001 A-6709-392-A HEAD DRUM DUH-23A-R
M1002 8-838-019-01 BHF-1600A "CAPSTAN"
M1003 8-835-056-01 DNR-1002 "THREADING"
M1004 8-835-047-01 MNR-4000A "REEL"
M1005 8-835-055-01 DNR-4700A
"CASSETTE COMPARTMENT"

PL1001 1-518-455-00 12V, 55mA
"CASSETTE COMPARTMENT"

PL1002 1-518-455-00 12V, 55mA
"CASSETTE COMPARTMENT"

*PL1001 1-518-508-00 12V, 55mA
"CASSETTE COMPARTMENT"

*PL1002 1-518-508-00 12V, 55mA
"CASSETTE COMPARTMENT"

PM1002 1-454-284-00 12V, 10/90 ohm "SEARCH"

PM1003 1-454-286-00 12V, 6/35 ohm "PINCH"

PM1004 1-454-285-00 12V, 8/52 ohm
"TAKE UP IDLER"

PM1005 1-454-284-00 12V, 10/90 ohm
"TAKE UP BRAKE"

PM1006 1-454-284-00 12V, 10/90 ohm
"SUPPLY BRAKE"

PM1007 1-454-285-00 12V, 8/52 ohm
"SUPPLY IDLER"

RV1001 1-224-540-00 VAR, CARBON "TRACKING"

△ S1001 1-553-159-00 ROCKER "POWER"

S1002 Y-2041-071-5 COUNTER
S1003 1-553-789-00 SLIDE "TIMER"
S1004 1-516-779-XX SLIDE "REMOTE SELEC"
S1005 1-516-779-XX SLIDE "MONITOR TV"
S1006 1-516-781-XX SLIDE "COLOR LOCK"

*AEP: S/N AND LATER 13,641

UK : S/N AND LATER 11,711

U/C: S/N AND LATER 10,301

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Ref.No. Parts No. Description

SWITCHING REGULATOR

△ 1-413-075-00 UR-02
(C,M,S,BOARDS)

1-560-036-00 CN TO CN

C BOARD(IN THE UR-02)

1-605-679-00 PRINTED CIRCUIT BOARD,C

C301 1-130-652-00 POLYPROPYLENE 3600PF 100V
C302 1-130-018-00 POLYPROPYLENE 1000PF 50V
C305 1-161-632-00 METALLIZED POLYPROPYLESTER 0.1
C306 1-161-632-00 METALLIZED POLYPROPYLESTER 0.1

D301 8-719-200-02 10E-2
D302 8-719-100-70 RD15E-B1
D303 8-719-815-85 1S1585

IC301 8-759-904-94 TL494CN

Q301 8-729-117-54 2SA1175

△ R302 1-247-099-00 NF,CARBON 47 1/4W

RV301 1-226-826-00 VAR,METAL 300

Ref.No. Parts No. Description

M BOARD(IN THE UR-02)

△ 1-605-531-00 PRINTED CIRCUIT BOARD,M
1-564-090-11 5P CONNECTOR PIN
1-564-163-00 6P CONNECTOR PIN

C101 1-130-711-00 METALLIZED POLYPROPYLESTER 0.22
400V

C102 1-161-738-00 CERAMIC 4700PF 400V
C103 1-161-738-00 CERAMIC 4700PF 400V
C104 1-161-738-00 CERAMIC 4700PF 400V
C105 1-161-738-00 CERAMIC 4700PF 400V

C106 1-161-742-00 CERAMIC 2200PF 400V
C107 1-161-742-00 CERAMIC 2200PF 400V
C108 1-161-742-00 CERAMIC 2200PF 400V
C109 1-161-742-00 CERAMIC 2200PF 400V

C111 1-125-268-00 ELECT 47 400V

C112 1-125-267-00 ELECT 300 400V

C113 1-123-659-00 ELECT 4.7 250V

C114 1-123-659-00 ELECT 4.7 250V

C115 1-130-808-00 METALLIZED POLYPROPYLESTER 0.22
400V

C201 1-161-913-00 CERAMIC 680PF 500V

C204 1-161-913-00 CERAMIC 680PF 500V

C205 1-108-868-00 POLYPROPYLENE 0.047 50V

C206 1-161-632-00 METALLIZED POLYPROPYLESTER 0.1
50V

C207 1-161-632-00 METALLIZED POLYPROPYLESTER 0.1
50V

C208 1-161-632-00 METALLIZED POLYPROPYLESTER 0.1
50V

C210 1-123-326-00 ELECT 3300 16V

C211 1-123-326-00 ELECT 3300 16V

C212 1-123-326-00 ELECT 3300 16V

C213 1-123-326-00 ELECT 3300 16V

C214 1-161-632-00 METALLIZED POLYPROPYLESTER 0.1
50V

C215 1-161-925-00 CERAMIC 100PF 500V

C217 1-161-915-00 CERAMIC 1000PF 500V

C218 1-161-915-00 CERAMIC 1000PF 500V

△ CN101 1-560-437-00 4P AC IN

CN201 1-560-438-00 5P OUT

E. PARTS

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UR-02(M), (S)

E. PARTS

Ref.No. Parts No. Description

△ D101 8-719-136-00 AC03FGMR
D102 8-719-911-55 U05G
D103 8-719-911-55 U05G
D104 8-719-911-55 U05G
D105 8-719-911-55 U05G

D201 8-719-903-02 ESAC33-02C
D202 8-719-903-02 ESAC33-02C
D203 8-719-903-02 ESAC33-02C
D204 8-719-111-44 F114D
D205 8-719-100-70 RD15E-B1

D206 8-719-200-02 10E-2

△ F101 1-532-604-00 THERMAL 5A, 250V, 126°C

△ L101 1-459-215-00 CHOKE
L102 1-459-215-00 CHOKE

L201 1-421-398-00 CHOKE
L202 1-421-370-00 CHOKE
L203 1-421-431-00 CHOKE

△ Q101 8-729-993-83 2SC2938

△ Q102 8-729-993-83 2SC2938

Q201 8-729-331-53 2SC2315

△ R101 1-205-631-00 NF CEMENT 15 5W
R103 1-247-087-00 NF CARBON 15 1/4W
R104 1-247-087-00 NF CARBON 15 1/4W
R107 1-247-103-00 NF CARBON 68 1/4W
R201 1-205-641-00 NF CEMENT 330 5W

R202 1-535-369-00 20mOHM, 2W

△ R204 1-247-204-00 NF CARBON 33 1/2W

R205 1-535-369-00 20mOHM, 2W

△ R206 1-247-090-00 NF CARBON 20 1/2W

R207 1-532-605-00 CURRENT FUSE, 400mA

Ref.No. Parts No. Description

△ R208 1-202-860-00 NF SOLID 100 1/4W
R209 1-202-860-00 NF SOLID 100 1/4W

△ T101 1-447-052-00 MAIN CONVERTER

△ T102 1-421-468-00 LINE FILTER

△ T103 1-447-106-00 DRIVE

△ T104 1-447-053-00 STARTER

T201 1-421-467-00 CHOKE

S BOARD (IN THE UR-02)

△ 1-605-532-00 PRINTED CIRCUIT BOARD, S

C001 1-108-833-00 POLYPROPYLENE 4700P 50V

△ D001 8-719-900-95 V09G
D002 8-719-900-95 V09G
D003 8-719-151-07 RD5.1E-B
D004 8-719-815-85 1S1585
D005 8-719-815-85 1S1585
D006 8-719-815-85 1S1585
D007 8-719-815-85 1S1585
D008 8-719-100-24 RD4.3E-B3

Q001 8-729-175-22 2SC2752
Q002 8-729-115-64 2SA1156
Q003 8-729-100-13 2SC2001

R003 1-247-115-00 NF CARBON 220 1/4W
R004 1-247-115-00 NF CARBON 220 1/4W
R005 1-247-103-00 NF CARBON 68 1/4W

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15-4. PACKING MATERIAL AND ACCESSORY (SUPPLIED)

 1-551-812-00 CORD, POWER (FOR U/C)

 1-534-698-XX CORD, POWER (FOR AKP)

 1-534-819-00 CORD, POWER (FOR UK)

3-672-719-00 INDIVIDUAL CARTON
 3-672-714-00 CUSHION (UPPER REAR)
 3-672-715-00 CUSHION (UPPER FRONT)
 3-672-716-00 CUSHION (LOWER REAR)
 3-672-717-00 CUSHION (LOWER FRONT)

3-672-720-00 BAG, PROTECTION
 3-701-632-00 BAG, POLY (FOR MANUAL)

 3-783-829-13 MANUAL, INSTRUCTION

15-5. FIXTURE (OPTIONAL)

J-6001-820-A DRUM ECCENTRICITY GAUGE (3)
 J-6001-830-A DRUM ECCENTRICITY GAUGE (2)
 J-6001-840-A DRUM ECCENTRICITY GAUGE (1)
 J-6001-930-A DRUM ECCENTRICITY GAUGE (4)
 J-6002-290-A DIHEDRAL ADJUSTING SCREW

J-6009-830-A FLATNESS PLATE
 J-6130-010-A REEL TABLE HEIGHT CHECK
 BASE JIG
 J-6130-020-A REEL TABLE HEIGHT CHECK JIG
 J-6150-020-A PINCH LEVER ADJUSTMENT JIG
 Y-2031-001-0 CLEANING FLUID

2-034-697-00 CLEANING PIECE
 3-702-215-01 TORQUE MEASUREMENT TAPE
 (100 mm DIA.)
 3-702-216-01 BACK TENSION ADJUSTMENT JIG
 7-661-018-01 SONY OIL
 7-732-050-20 TENSION SCALE (50 g FULL
 SCALE)

7-732-050-30 TENSION SCALE (100 g FULL
 SCALE)

7-732-050-40 TENSION SCALE (200 g FULL
 SCALE)

7-732-050-50 TENSION SCALE (500 g FULL
 SCALE)

8-960-015-03 ALIGNMENT TAPE, RR5-2SA
 8-960-015-63 ALIGNMENT TAPE, RR5-2SA-PAL
 9-911-053-00 THICKNESS GAUGE

Standard products Head Demagnetizer, HE-4

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